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ABSTRACT

This practicum was designed to assist the teacher in addressing the learning styles and modalities of students in a second-grade classroom. A learning style inventory was administered to the students, and two learning style inventories were administered to the teacher. Mini-training sessions were then developed on addressing learning styles by the researcher. The sessions were held with the teacher after school; class observation visits were held on the same days. Over the course of the training, the teacher began to address more of the students' learning styles and learning modalities. The improvement of the students, on their writing samples and in their math skills, were greater than anticipated. Changes in the teacher's technology attitudes were positive, and changes in students' attitudes, overall, were as predicted. (Nine appendices include copies of consent letters, samples of the technology attitude assessment surveys, hardware and software assessment data sheets, and samples of the newsletters sent to parents.) Contains 39 references. (AA)

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Utilizing Mini-Training Sessions to Assist a Teacher in the Use of a Variety of Activities and Strategies to Address the Learning Styles and Modalities of Students in the Second-Grade Class

by

Viola P. Stallings

Cluster 57

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A Practicum I Report Presented to the
Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

NOVA SOUTHEASTERN UNIVERSITY

1994

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1994

PRACTICUM APPROVAL SHEET

This practicum took place as described.

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This practicum report was submitted by Viola P. Stallings under the direction of the adviser listed below. It was submitted to the Ed.D Program in Child and Youth Studies and approved in partial fulfillment of the requirement for the degree of Doctor of Education at Nova Southeastern University.

Approval

1/10/95

Date of Final Approval of Report

Georgianna Lowen, Ed.D., Adviser

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ABSTRACT

Utilizing Mini-Training Sessions to Assist a Teacher in the Use of a Variety of Activities and Strategies to Address the Learning Styles and Modalities of Students in the Second-Grade Class. Stallings, Viola P., 1994: Practicum Report, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Learning Styles/Learning Modalities/Technology and Learning/Training/Technology Attitude Assessment Survey/Second-grade Class/Computers/Mathematics/Writing Skills

This practicum was designed to assist the teacher in addressing the learning styles and modalities of students in a second-grade classroom. Although the teacher was aware of the learning styles and modalities and used different technologies in the classroom, mini-training sessions were given to enhance her knowledge and class-observation visits were made to note any changes in teaching style to further address the students' learning styles and modalities. During the observations, the learning styles of the students were noted. A learning style inventory was administered to the students and two learning style inventories were administered to the teacher.

The author developed mini-training sessions on addressing learning styles. The sessions were held with the teacher after school on the same days as the class-observation visits. In addition to the class-observations notes and the learning styles theories notes, the author compiled information about each child's action during the observations, about the students' and teacher's discussions, and about the learning style inventory results. Using the information from these notes, the author wrote a letter to each child's parents that was signed by of the teacher and author. Each letter had a newsletter with students' writing samples and two photos enclosed. The photos were of the whole class and of friends/"buddies" in the class that were to represent whole and small group interactions.

The teacher stated and was observed to purposely began to address more of the students' learning styles and learning modalities. The improvements for the students, on their writing samples and in their math skills, were higher than anticipated. The technology attitude changes were more positive for the teacher than originally stated and overall as predicted for the students. Because of the insight she gained from the mini-training sessions and from the results of the students' learning style inventory, the teacher made plans to administer the same learning style inventory to her future second-grade classes. She plans also to share the newsletter format with other second-grade teachers within the school district.

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September 17, 1994 Viola Stallings
(date) (signature)

CHAPTER I

INTRODUCTION

School District's and Second-Grade Class Descriptions

The setting of School District I is a suburban town with a student population of 9,553. The second-grade teacher has a class in one of the elementary schools in this Northeastern school district. The average student-teacher ratio in the school district which includes classroom and special-subject-area teachers is 22:1 and the second-grade classroom student-teacher ratio is 22:1. The students are from the lower-middle class to middle class socioeconomic backgrounds with the following ethnic distribution of (a) 94.4% White, (b) 2.1% Hispanic, (c) 1.6% Black, and (d) 1.4% Asian/Pacific Islands and with the ethnic distribution in the second-grade classroom being 100% White. The average classroom population includes the bilingual and some of the special needs students. (The exceptions are the severely emotionally and physically handicapped.)

To meet the needs educationally of the students, in 1990 the school district's administrators decided to consider purchasing technologies for all the school buildings. The superintendent's vision and school district's mission are the reasons the school district's administrators and school board decided to implement technology within the classrooms. The superintendent's vision was to have technologies used by all students as educational tools and the district's mission was to successfully implement a program that integrates technologies

with a curriculum that meets the needs of the students. (See Appendix B for the School District I's Mission statement.) At the present time, all the school district's student population has access to the computers and/or other technologies in the classrooms.

In 1993 the school district went from less than 100 computers to more than 2,000 computers district-wide and made a commitment to integrate technologies in the academic curriculum with district-wide training and follow-up consultation visits that began to be implemented in the Spring of 1993. In the elementary schools every classroom had installed five computers and a printer connected to a network that had teachers' software tools and language arts and mathematics courseware. The other technologies in the elementary schools are chalkboards and chalk, paper and pencils/pens, textbooks, slide projectors, film strips, movie projectors, CD-ROM drives, modems, VCRs, cassette recorders, and LCD panels. Many teachers have been and some teachers still are very comfortable with the 'teacher-text-chalk-talk' approach to instructions (Komoski, 1987). To assist the teachers with the transition from using limited technology to using a more variety of technologies in the classroom, the school district provided initial training and follow-up consultation visits for all the teachers in language arts courseware and provided for a few teachers with training on technology trouble-shooting techniques and network software. The second-grade teacher was one of the teachers who attended both sets of classes.

The School District I's Curriculum and Technology Committee which consisted of the two curriculum assistant superintendents, the curriculum technology supervisor, the elementary school curriculum/training supervisor, and the author planned the training, follow-up consultation visits, and pre-assessment and post-assessment evaluations. Subcommittees from the

Curriculum and Technology Committee planned the technology hardware and software/courseware acquisitions by grade levels.

Author's Work Setting and Role

The author's work setting is EduQuest - An IBM Company that has been selling technologies, software, and services to the K-12th Grade Education Industry. (See Appendix C for EduQuest's Mission Statement.)

The author is the EduQuest's Senior Systems Engineer and Project Manager for the District-wide Technology Implementation for School District I as well as the trainer of the classes for the persons responsible for the network in each building. She is an advocate for technologies in the classroom and for training teachers, supervisors, and administrators to use technologies in each subject area. As a systems engineer, the author's role is to assure that the customers in one Northeastern state are aware of the company's offerings of software, courseware, curriculum integration ideas, technical services, technical telephone support, project management support, instructional consultation, and financing options.

As a system engineer, the author works with Marketing Representatives in forming plans to sell and implement total solutions (hardware, software/courseware, services, and training) as well as technically providing guidance, direction, and support to each Marketing Representative's set of school districts. When business partners or computer dealers are involved in customers' installations, the author coordinates their activities at the customers' sites. If there is a need for training programs, the author develops the training program's content and she and/or a teacher consultant teaches the

customers, helps the customers gain confidence in their abilities to use technology, and assists the customers in becoming self-sufficient. Based on the needs of the business and the customers, the author has been assigned to work with the customers in one Northeastern state and assist, if needed, with the customers in two other Northeastern states.

As a project manager, the author works with customers to coordinate all installation and implementation activities by: finding the best products and services for the customers' needs; interfacing with the vendors with those products and services; contracting the products or services for the customers; preparing and implementing classroom, office, and/or district-wide cabling; recommending the training programs based on the combination of courseware and software; assisting in ordering EduQuest's hardware, software, courseware, and teacher materials; contacting EduQuest's teacher consultants for the training and the follow-up visitations; arranging for the ordering and delivery of all technology related products; coordinating payments to the vendors; arranging for materials for all the training sessions; having regular meetings with the supervisors and assistant superintendents responsible for the implementation of the installation; teaching technology classes; arranging for hardware maintenance agreements; checking inventory; installing and maintaining software/courseware; testing the completed network set-up of hardware, software, courseware, cabling, etc.; informing customers of upgrades to the hardware and software; and providing customers with up-to-date information about technologies in the Education Industry.

School District I was assigned to the author during the time of a limited amount of technologies in the district and during the decision to pilot computer technology in the K-3rd-grade classrooms in one of the elementary schools.

Because of the success of the pilot, the school district has implemented technology district-wide in all academic classrooms with the author as the EduQuest Project Manager for the school district who has been coordinating the implementation with the School District I's Project Manager.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

The teacher was not using activities and strategies to address all the learning modalities and learning styles of the students in the second-grade classroom.

There is a continuous need to consider a variety of technologies and courseware within the classroom to address the different teachers' teaching styles and students' learning styles. There is a need to depend on textbooks less as the primary presentation and instructional tool, especially since many of the students today are poor readers who do not learn as well with this presentation method for learning. The textbook is a nineteenth-century presentation tool being used with twenty-first century students who are familiar with the TV, cassette recorder, VCR, computer, hand-held and/or arcade video games. The curriculum has not addressed all the learning modalities and learning styles of these students, nor has the teacher fully addressed how the learning modalities and styles influence the content, the approach, and media for effective instruction. Therefore, there is a continuous need to improve instructional curriculum within the second-grade classroom by addressing the needs of all students.

Problem Documentation

The following was the evidence to support the existence of the problem: The school district's administrators told the author that they had a need for computer programs that are directly related to the school districts's mission, and at the same time stimulate the interest of faculty and boost the morale of the faculty. The school district's mission stated that the district's goal is for all the students to use the tools of educational technology to become life-long learners. (See Appendix B for the School District I's Mission statement.) The school district's curriculum, in the past, has been implemented by using chalk-and-talk approach in all subject areas, except for the high school science classes.

The second-grade classroom was a reflection of the changes that have been occurring in the school district. Based on the technology attitude assessment surveys administered to the second-grade students and the teacher, the following were the feelings about school and work as shown in Tables 1 and 2: (See Appendix D for samples of the original student and teacher technology attitude assessment surveys.)

Table 1

Technology Attitude Pre-Assessment Survey Results of the Second-Grade Students

General Responses	Choices		
	Yes	No	Not Sure
1. What grade are you in? 2nd grade			
2. I am: 12 girls 9 boys			
3. I enjoy being at school.	17	2	2
4. School work is boring.	9	12	0
5. I like to learn new things.	19	2	0
6. I like to use the computer.	21	0	0
7. I tell my parents about the work I do on the computer.	13	8	0
8. I tell my friends about the work I do on the computer.	8	12	1
9. I feel confused when I use the computer.	0	20	1
10. Things I learn on the computer help me with my classwork.	17	4	0
11. My teacher helps me when I do not understand something on the computer.	20	1	0
12. My grades are better since I began using the computer to learn.	12	5	4
13. I am proud of the work I do on the computer.	20	1	0
14. Using computers is a waste of time.	5	16	0

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15. I like doing math word problems.	12	6	3
16. Schoolwork is easy for me.*	12	0	8
17. Computer work was fun at first, but then it got to be boring.*	5	14	1
18. I like reading stories.	18	2	1
19. I like playing word games.	20	1	0
20. The computer quickly tells me if I get the correct answer.	17	2	2
21. When I do not get the correct answer, the computer usually does not give me enough help.	9	11	1
22. Working at a computer makes me feel separated from other kids.	7	13	1
23. When I do not understand something on the computer, I work until I figure it out.	14	5	2
24. When I do not understand something on the computer, I get help from other students.	15	4	2
25. It is easy for me to do math problems.	14	1	6
26. I did not like using the computer in school this year.	4	17	0
27. When I do not understand something, the computer helps me out.	11	6	4
28. Schoolwork is hard for me.	1	15	5
29. When I do not understand something on the computer, I like to ask for help.	10	7	4
30. I do not care whether or not I use computers ar school.	2	19	0
31. I can type without looking	11	6	4

at most of the letters.			
32. I use a computer outside of school for fun.	5	15	1
33. When I type, I can find some of the letters but it takes sometime.	10	9	2
34. I am just beginning to learn to type on the computer.	2	18	1
35. When I do not understand something on the computer, I can get help from my teacher or another adult.	15	4	2
36. I use a computer outside school for learning activities.	4	16	1
37 I like using computers in school.	20	0	1

38. Which is your easiest subject:[b]

Reading and Language Arts	Science	Math	Social Studies
4	6	6	2

39. Which is your hardest subject:[b]

Reading and Language Arts	Science	Math	Social Studies
4	4	6	0

Essay

---

40. What do you like MOST about using computers at school?

Some comments by the students: Math. Everything.

41. What do you like LEAST about using computers at school?

Some comments by the students: Nothing. Math.

Turning them off. When my teacher tells me to get off.

42. What WORDS would you use to tell about this year in school?

Some comments by the students: Fun. Writing. Math.

Note. From IBM, New York State Education Department, & the University of the State of New York. (1993). IBM/NY State Education Department joint study. Unpublished manuscript. Revised by Brick Township School District (1994).

[a] n = 21 of 22 were present and only 20 students responded to this item correctly by making one choice. [b] n = Some students did not respond because of the change in the choices of letters for the multiple choice answers.

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Table 2

Technology Attitude Pre-Assessment Survey Results of the Teacher of the Second-Grade Class

	General Responses	Choices			
		Never	Occasionally	Very Often	Often
1. Education level:	Bachelor's				
2. Total Years Teaching	More than 20				
3. Grade level	2-3				
4. I am	Female				
Over the past year how often did you use technology?					
5. As a teaching tool for instruction in Language Arts?	Very Often				
6. As a teaching tool for instruction in Mathematics?	Very Often				
7. With a word processor for personal work?	Often				
8. With word processing or other program for preparing tests or assignments?	Occasionally				
9. With word processing or other productivity software for other professional tasks?	Occasionally				
10. In a program for entering or calculating grades?	Never				
11. In a graphics or drawing program?	Very Often				
12. In game or simulation software?	Occasionally				
13. With a modem for telecommunications?	No				
14. Do you have a computer at home?	Yes				
15. What type of computer do you have?	Other				
16. Do you have a modem?	No				
17. How long have you been using your computer?	More than 5 Years				
18. You talked about computers or technology related issues to other teachers or staff members?	Very Often				
19. Your advice on computers was sought by other teachers?	Often				

20. Technology was a topic of conversation among students in your presence?	Very Often
21. You were present when a principal or administrator talked about computers or technology related issues?	Occasionally
22. Teachers worked together to plan for more effective use of technology?	Often
23. In the last school year, approximately how many hours did you spend in formal training to use computer or other technologies?	31-40
24. In the last school year, approximately how many hours did you spend learning to use a computer or other related technologies on your own time?	41-50
25. What was your initial reaction to the period of formal training in the use of Technology?	Overwhelming
26. I would like to get better at using the computer to: (Select the ones that are applicable) - A. Evaluate student achievement B. Encourage independent learning C. Encourage independent problem solving D. Individualize instruction E. Monitor basic skill building	All were selected

	Choices			
	Strongly Agree	Agree	Disagree	Very Disagree

Please respond to the following:

27. Since the addition of computers in my classroom, I have changed my teaching methods.	Agree
28. The use of computers allow me to individualize instruction.	Agree

29. Since computers were added to my classroom, I encourage more cooperative learning among the students.	Agree
30. It is difficult for me to coordinate the use of the computer software with my curriculum.	Disagree
31. Since the addition of computers in the classroom, I use my time more efficiently.	Disagree
32. Discipline problems are decreased since I began using the computers.	Agree
33. The use of the computers in my classroom has become an important administrative tool.	Disagree
34. Students do not show transference of skills from computer assignments to their classwork.	Disagree
35. Having computers in my classroom allows me more time to devote to the individual needs of my students.	Agree
36. Since computers were added to my classroom, I have become better at identifying student weaknesses/strengths.	Agree
37. The use of computers in my classroom has become an important part of my instructional program.	Agree
38. Computer use should be expanded in my classroom.	Agree
39. My students should spend more time using computers next year.	Agree

Do you feel that the use of computers and related technologies in your classroom helped/improved the following?

---

40. Student attention	Agree
41. Student concentration	Agree
42. Student request for help when needed	Agree
43. Student problem solving	Agree
44. Student independent learning	Agree

45. Student achievement	Agree
46. Student attitude toward learning	Agree
47. Student attitude toward school	Agree
48. Student management of time	Agree
49. Students learn more quickly.	Agree
50. Students learn about things they otherwise would not be exposed to.	Disagree
51. Students get immediate feedback.	Agree
52. Students are motivated to practice new skills.	Agree
53. Students practice and learn basic skills more.	Agree
54. Students have better retention of facts.	Agree
55. Students who learn faster are more challenged.	Agree
56. Students who learn at a slower rate can progress at their own pace.	Agree

Essay

57. Additional Comments:

"With more computers, I could accomplish more in less time and have more time for individual attention to students. Class size must be kept small."

Note. From IBM, New York State Education Department, & the University of the State of New York. (1993). IBM/NY State Education Department joint study. Unpublished manuscript. Revised by Brick Township School District (1994).

Overall both surveys had more positive responses than negative responses; however, the responses were not the most positive responses possible by the students or the teacher. The survey results for the students showed approximately two-third of the students responding positive to the questions. One-third of the students were not having as positive learning experiences within the class or with the computers, since they responded 'no' or 'not sure' to the questions on the survey. The survey results for the teacher showed that the teacher used technology 'occasionally' and 'often' and checked 'agree' in making positive attitude changes; however, there were only a few responses with 'very often' in usage of computers and there were no responses of 'strongly agree' with attitude changes.

During the week of and days after the students' survey was administered, samples of math and writing assignments were collected by the teacher. The math tests results showed that the students were performing the operation of re-grouping with subtraction. The writing samples showed that the students were writing one page of poetry and/or prose with simple to many compound sentences.

For math the teacher was using the textbook, Heath Mathematics Connection: Grade 2 (1992), and the courseware, IBM/EduQuest Exploring Math Concepts - Level I, IBM Math Practice - Level I, IBM/EduQuest Measurement, Time, and Money - Level I, and IBM/EduQuest Exploring Mathematics with Manipulatives - Level I (Level I is for kindergarten through second grade).

For language arts the teacher was using the courseware IBM Writing to Write - Form I as the complete language arts program. IBM Writing to Write addressed the how, why, and when of writing by having students go beyond learning discreet rules and allowing them to approach writing as an activity for

problem-solving. WTW consists of lessons that had the students observe, define, describe, create, compare, narrate, or persuade the readers, and then define a strategy to prepare, organize, and present the ideas with written words.

Causative Analysis

The following were the causes of the problem:

- The nineteenth-century technology, the textbook, became the standard in the schools for the twenty-first century technology.

- Teachers accepting their roles as 'sage on the stage' with the 'teacher-text-chalk-talk' form of presentation and not considering other roles, .e.g., as monitor and/or as facilitator.

- Many teachers and school districts were not and are not investing time and money in training programs (whether self-initiated training or district-wide training, respectively) to learn more about learning styles and modalities.

- Because of limited funds, space, and technology experiences, the school building personnel have decided in the past not to have computers and other technologies or to limit the computers, printers, etc. to the lab environment.

- School administrators have obtained technology (textbooks) to perform tasks that they knew would help their students maintain a certain level of test scores on the annually administered national standardized tests and they hesitated to adapt anything that was not familiar to the teachers and that might, for any time period, affect their students scores on these national tests.

- With limited funds, training has been and is affected because the school districts are unable to invest in all the training sessions and follow-up consultation visits needed to support the teachers.

- A limited amount of time and resources has been and is spent in involving parents by soliciting their support in the programs at school and/or providing them support at home, especially with programs that deal with technologies to address learning styles and learning modalities.

Relationship of the Problem to Literature

Since computer technology is becoming more essential to classroom instructions, school districts are beginning to place computers into the classrooms. With a well-designed program that includes computers and other technologies and the teachers trained to integrate the use of the technologies in the curriculum, all the students' learning styles and learning modalities are addressed.

Many learning styles approaches with learning style instruments/inventories have been developed over the last few years, e.g., Myers Briggs' personality type, Cranfield's learning styles, Kolb's learning styles inventory, etc. The one that discussed both learning and teaching styles is Kolb's learning styles inventory. Kolb has four categories of LSI (Learning Styles Inventory): diverger prefers concrete experiences and process with reflective observations; assimilator prefers abstract experience and process with reflective observations; converger prefers abstract experience and process with active experimentation; and accommodator prefers concrete experiences and process with active experimentation.

In the schools the administrators have to give consideration to learning styles and what internally as well as externally affect learning styles, e.g., Gardner's seven forms of intelligence that affect seven styles of learning.

Gardner's learners are known as: linguistic learner who learns best by saying, hearing, and seeing; logical/mathematical learner who learns by categorizing, classifying, working with abstract patterns/relationships; spatial learner who learns by visualizing and working with colors; musical learner who learns with music; bodily\kinesthetic learner who learns by touching; interpersonal learner who learns by sharing, comparing, and cooperating; and intrapersonal learner who learns by working alone, and self-paced instruction. Using many types of media/technologies within the schools provide learning alternatives by addressing the learning styles of disadvantaged students and\or of diverse student populations.

In a study of learning styles, Pies (1987) studied a sample of Black students from low socio-economics status to show the relationship between the teacher's perception of learning styles and the academic achievement of the students. This study of learning styles was based on other studies that had shown evidence of a connection between students' perception of their learning styles and their achievement on cognitive and academic tasks. The changes in the students were evident by the teachers. By Pies administering a learning style instrument to teachers and a perceived learning style instrument to students, the learning styles of the students became known by the teachers and were used as predictors of achievement, while the perceived learning styles of the students were not predictors of achievement for Black students from the low socio-economic level in the elementary school sample. Although the learning styles part of the study was conclusive, the perceived learning styles part was inconclusive.

By interacting daily with their environment, hands-on learning, most students learned actively and integrate existing information with explored

experiences to gain more knowledge for future use. To assist with these interactions, technologies, in general, and computers, in particular, are used in the classroom. Research studies within the last twenty years have shown that students accomplish more in class when computers are in the classroom and is used by the students. Some statistics that have been published concerning teaching with computers as tools in the classroom have shown students learning at least 30 percent more with 40 percent less time and with 30 percent less cost.

A concept and framework developed by IBM (International Business Machines, Incorporated), called Teaching and Learning with Computers (TLC), integrates four research-based educational ideas that emphasize computers at the point of instruction, in the classroom: technology, small group learning, cooperative learning, and active learning in the classroom. Each of these educational ideas are known to be critical to instructions. In viewing the research, the four research-based educational ideas helped classroom instruction and made a positive contribution to the students' achievement of cognitive, affective, and social outcomes. When using computers in the classroom with appropriate courseware to address all the modalities, a comprehensive approach and design to teaching and learning are created. This TLC approach is designed by using learning centers in the classroom. In fact, this design includes learning centers for listening, reading, writing, and speaking in small groups to develop a cooperative environment.

It is necessary for students to enjoy the process of learning in order to eventually produce a product through learning. To enjoy this process they must have their learning needs met by being taught lessons that are organized and address all the learning styles. Such a design covers multi-disciplines. Students can learn, e.g., history, math, science, language arts within one topic and

produce prose and/or poetry. During this experience the skills of communication, organization, planning, and cooperation are developed and/or enhanced.

The U. S. Business Roundtable that consists of more than 200 CEO's has an Education Task Force that has reported the essential components of an education system that is successful. One of the components is the design and implementation of a system that make constructive use of technology to increase the educational productivity of the students as well as the teacher.
This component can be made a reality if there are applications of the following solutions that have been researched within the past two years:

* Restructing instruction and administration in the schools,

* Making radical changes in curriculum,

* Adopting individualized learning techniques and delivery systems,

* Re-equipping the schools,

* Providing, accelerating and increasing the depth of faculty training in the effective use of technologies as learning tools, and

* Training or retraining and holding administrators accountable for the effective management and usage of all the technologies and all the resources.

The in-depth training of teachers is especially key when re-designing the curriculum, enhancing the curriculum, or supporting or re-emphasizing the content of the existing curriculum. Training is needed with or without the implementation of the 21st century technologies.

Surveys have been conducted with teachers to obtain their opinions or attitudes about topics on training, computer usage, and computer effectiveness. One survey was conducted by IBM in 1990 to determine the use of and attitudes toward computers by 1,100 teachers. The results showed that 75% of the

teachers believed that computers assisted them by giving them more one-on-one time with the students and 74% of the teachers felt that computer usage allowed them to be more creative in their classroom instructions, especially if they were well-trained in the effective uses of technology.

Computer technology has had many functions in the classroom. These functions can be summarized into four functions in instruction: as a medium or an object or a topic - of learning, - for performing some task, - for providing instruction, and - for managing instruction. These functions, applied in a classroom and used correctly and efficiently with technology, can assist teachers in addressing all the learning styles and learning modalities of the students.

Many studies and research projects on the integration of technology augmenting instruction have been funded by private industry for more than twenty years. In the comprehensive studies results show that many technology-based instructional pilot programs have shown some significantly improvements:

* Students attention span changed from 15 minutes to over 30 minutes for an average class period of 45 minutes;

* Students maintained a retention of instruction; and

* Students improved on their rate of learning because of the individually-paced instruction.

Many of these studies have shown that the students' needs were met directly and indirectly by addressing the students' learning modalities and styles. Further results of the technology interactive environments were the improvement in reading and math skills by the students performing two grade levels above their original level in less than one year.

To have schools that produce these results on a continual basis, there has to be more time spent on tactical and strategic planning of curriculum and

technology design. Not only is there a need for tactical planning by school districts to incorporate ideas to address learning styles, but also there is a need for strategic planning by school districts to incorporate researched approaches in the curriculum and in incorporating in-service training days as well as follow-up consultation days for the teachers. As strategic planning is incorporated more seriously, the strategic planning process can be used to re-examine, re-focus, seek, and/or create means to address social, educational and technological changes that affect the schools and that maybe used to accomplish the school districts' mission. Also, it may be used to implement designs to restructured the schools in order to address the needs of the students of this information Age.

Another factor, in the improvement of learning when the computer technology is used interactively, is the increased quantity and the improved quality of a learner's time on task. The school, with the teachers, is to provide each student with stimulating, cooperative technological learning experiences that respect and address the student's artistic capacities and natural processes. With the changes in our society during this information Age, more articles and books are written focusing on teachers having technology at the point of instruction, in the classroom, to be used as an aid to address all the learning modalities and learning styles of the students. In order for the teachers to aid/assist the students, they have to be trained concerning learning styles and modalities and on the technologies that are needed to address these styles and modalities.

With the school districts' tactical and strategic plans that incorporate an approach to meet the learning-style needs of the students, the teachers began to use techniques with technologies in the classroom to improve the students'

attitudes about the school and its academic subjects, to improve the students' performance on academic and cognitive tasks, and to prepare the students for the 21st century. Also, this approach prepares the students to be competent persons not only in the three R's but also in three A's of acquire, analyze, and access. Teachers knowing about students' learning styles and teachers' teaching styles, and then effectively using their teaching styles to teach to the students' learning styles contribute to these students' future successes in acquiring, analyzing, and accessing information.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

The following goals and outcomes were projected for this practicum.

Goal

The teacher will use a variety of activities and technologies to address the learning styles and learning modalities of the students in the second-grade classroom.

Expected Outcomes

In general, the goal is for the second-grade class students to show evidence of improvement with higher positive technology attitude survey scores and with better writing and math skills after the implementation of the proposal when there have been additional changes in the classroom instructional activities and strategies to address the learning styles and modalities. On the technology attitude assessment survey the second-grade students' scores will show a one point improvement in all the survey items that did not already have the highest ratings. The teacher survey will show a 20% change in positive responses, i.e., strongly agree and very often.

The students' math and writing skills will show improvement. The students'

math skills will show that the students will be beyond measurement with non-standard units (which was the class accomplishment the last school year). The writing competence will show that the students have improved in their overall expression, length, the creativity and in the content of their writings while remaining to use poetry and prose with compound and complex sentences.

According to the second-grade teacher at the end of the implementation, she expects the students in mathematics to be proficient in addition and subtraction of two-digit numbers with and without regrouping. She expects the students to be able to understand beginning fractions, measurement, and beginning multiplication and division. These results will be evident on the written school work and test administered at the end of the implementation as well as the computer courseware student data collected at the end of the implementation.

In language arts, particularly writing skills, the teacher wants the students at the end of this implementation to be able to tell about an important incident in sequence using expanded sentences. She expects them to use feelings. She also expects them to understand nouns, adjectives, and verbs. Since they use IBM Writing to Write Form I (developed by Dr. J. H. Martin) as their full-language arts program, she expects the students to be on or complete Writing to Write Unit 8 - Narration. As stated by Martin (1991),

> Unit 8, Narrative, asks students to write a story about something that happened to them. While this composition requires students to 'tell the facts,' that is, who, what, when, where, and why, the narrative must include information about how the student was feeling during this event (p. 4).

IBM Writing to Write is a technology-based program that "emphasizes

cooperative learning, learning as a problem-solving activity, and a multisensory approach that accommodates different learning styles" (Curriculum Product News, 1992). Writing to Write Form I is the second-grade version that is a comprehensive writing curriculum that teaches the students to write effectively and efficiently.

Measurement of Outcomes

When considering the measurement of outcomes, the criteria of the evaluation, the methods of conducting the evaluation, the selection of the tools, and the procedures for collecting data are all considered.

Criteria for Evaluation

The evaluation criteria for the students included improved students' attitude toward technology, the improved performance on math tests, and the improved writing skills. The evaluation criteria for the teacher included the improved teacher's attitude toward technology, the application of knowledge gained during the mini-training sessions about addressing students' learning styles, the continual interest in and addressing of the students' learning styles with technologies.

Method of Conducting Evaluation

The students and the teacher were to be administered pre- and post-technology attitude surveys and the students were to be administered pre- and post-mathematics tests. The teacher would collect the students pre- and post-writing samples. The author would record information concerning the eight

classroom visits and ten mini-training sessions, as well as, from information gathered from data collection sheets recorded by the teacher consultant during her two classroom visits.

Tools Used

Using the inventory data sheets as guides, the inventory lists of the hardware and courseware/software in the second-grade classroom were recorded. Because of the requirements of the newly installed courseware, the hardware was upgraded during the first week of the implementation to consist of: five (5) computers which are EduQuest Model Forty with 4MB of memory, audio, no harddrive, 3.5 inch 1.44 diskette drive, and a token ring adapter that attaches to a server and one printer which is Lexmark Personal Series II Printer. (See Appendix E for Hardware Inventory for the School Building.) The second-grade courseware installed on the network (a computer network is two or more computers attached to share information and resources with one computer containing the shared programs/courseware/software) consists of: IBM Writing to Write Form I, Children's Writing and Publishing, IBM Touch Typing for Beginners, IBM Reading for Meaning - Level I, IBM Reading for Information - Level I, IBM Exploring Math Concepts - Level I, IBM Math Practice - Level I, IBM Math Concepts - Level I, IBM Math and More - Level I, IBM Math and More - Level II, IBM Measurement, Time, and Money - Level I, IBM Exploring Mathematics with Manipulatives - Level I. The level I courseware contains curriculum material for kindergarten through second grades. The teacher has access to the third-grade courseware when, and if, she has more advanced students. The third-grade courseware is the same type of courseware but level II. (See Appendix F for Software Inventory for the School Building.)

Other technologies that were to be available to the teacher were books, black boards and chalk, cassette recorders, film projectors, slide projector, and a VCR. Other available materials were posters and art supplies.

Procedures for Collecting Data

Technology attitude assessment surveys were to be administered to the teacher and students before the implementation and during the last week of the class observations. (See Appendix D for the surveys.)

Three mathematics tests were to be administered before the implementation and during the end of observations: the enrichment test covered subtraction with re-grouping with two-digit numbers (Manfre, Moser, Lobato, & Morrow, 1992, p. 238); the cumulative test covered multiplication problems with sets of two-digit numbers, multiplication sentences with sets of one-digit numbers, subtraction problems with sets of two- and three-digit numbers, and subtraction sentences with sets of two-digit numbers (pp. 383-384); and the mid-chapter test covered addition with two-digit and three-digit whole and decimal numbers (p. 360).

The Writing to Write Form I units were to be used as guidelines for the students pre- and post-writing samples. Samples of the students' writings were to be collected for content and sentence structure. The students were on Unit 4 in the beginning of the implementation and were expected to complete unit 8 at the end of the class observations and closing of the school.

The teacher, author, and teacher consultant data sheets were designed by the author and used by each of them. The teacher was requested to collect data daily for seven weeks; the author was to visit eight times once a week for one hour and record the observations; and the teacher consultant was to visit twice for one-hour and three-fourth hour, respectively. (See Appendix G for Class

Observation and Teacher Data Sheets.)

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

How teachers' teach and students' learn are important for educational reform. Reviewing the Tylerian's approach to evaluation (Popham, 1993), goal-oriented educational programs adequately implemented are evaluated to measure their affects on the caliber of education for the students' intellectually, emotionally, and physically.

Scriver's goal free evaluation process (Popham, 1993), as well as the goal evaluated process, will be used during the evaluation process because it allows the author to consider and be aware of a wide range of educational program's outcomes both internally or externally related to the programs being evaluated.

Different schools and classes have used software and technologies to address learning styles of the students. In using the multimedia programs such as IBM Linkway that goes across disciplines, students from a Southern high school have responded to surveys that showed them much more excited than they were the previous year. The students felt that the changes in the classes reflected and taught the real-world skills that are needed (Todd, 1992). In other words, the multimedia program revitalized their learning experiences with the multimedia courseware and its hardware that addressed their learning styles.

Teachers using the IBM Writing to Write courseware and IBM Teaching and

Learning with Computers courseware better met the instructional needs of the students in a Southern school district than teachers using the traditional instructional methods and materials. Since the student population is diverse, the tools are needed to address the diversity of their learning styles which is met by the full-curriculum language art program, IBM Writing to Write (WTW), and other TLC courseware. During the study at this Southern school district, half of the students used WTW and other TLC language arts and mathematics courseware in the second-grade classrooms. There were significant gains in writing assessment and math and reading achievements. In the school district half of the students did not have technology in the 2nd grade or in K-1st grade. Many of their learning needs were not met in the K-3rd grade (EduQuest/IBM, 1992). It has been stated by educators and psychologists that many students that drop out of school because of perceived or actual academic failure or negative attitudes about school, drop out mentally and/or emotionally in the early primary grades (K-2nd grades) because of their lack of success and drop out physically as teenagers when it is legal. In a well-integrated system with teachers, courseware, technology addressing the learning styles and modalities of the students and students at-risk can master the essential academic skills in primary grades (K-3rd grades) and continue to actively participate in the learning process. This prevent these students from being placed in remedial programs in the intermediate grades, because the academic skills shave not been mastered by the end of the primary grades (3rd grade).

In an elementary school in the Northwestern school district grades 3rd-6th received technology and implemented TLC with its district's instructional model. With TLC and a variety of courseware the district was able to adapt to different teaching styles (EduQuest/IBM, 1992). This model also responded to students

socially and academically. Students became actively involved in learning and not just passively listening to instructions. Students spent more time on task and were involved in activities that addressed all students' learning styles. As a result of the implementation, the teachers and administrators perceived the students as self-directed learners and critical thinkers able to use the tools of technology.

In an elementary school in a Northeastern school district the teachers, parents, and students were surveyed in 1992 after using for a year technology across grade levels and in resource rooms, Special Educations self-contained rooms, and compensatory room. The overall results of the survey was that the teachers, students, and parents noticed a changed environment in which students could participate more actively in the learning process. The results of the students survey indicated that they liked using computers; they improved their performances on their school work; they had a positive attitude toward learning; and they were enthusiastic about school (EduQuest/IBM, 1992).

One elementary school in a Southern school district that had the lowest NCE scores, one of the lowest in attendance figures, a number of vandalized buildings, a number of broken into buildings and discipline problems, had changed after implementing technology over a five year period. During the last three of the five years, there have been changes. The school district has purchased WTW and math courseware. In 1992 the second-grade students had gains in the NCE score above the district's growth in most areas. Language arts had the most growth followed by math and the total battery score. Science and social studies scores were also impacted. Attendance figures were the highest within the last three year reported. Attitudes of the students improved and as a result there has been reported a decrease in students' vandalism, break-ins, and

discipline problems. Also there has been an increase in parent volunteers to assist the teachers in the school (EduQuest/IBM, 1992).

After three years of having technology in the classroom with the TLC approach, a Midwestern school district's elementary school had a drastic improvement in student achievement (EduQuest/IBM, 1992). The students' were using TLC language arts and mathematics courseware. One of the administrators contributed the success to several factors: 1) technology with the learning center approaches addressed the students' learning styles; 2) students are motivated to learn; 3) students are attending school; and 4) parents are being more involved. Each factor related to technology with language arts and math courseware being implemented and expanding the educational horizon.

Description and Justification for Solution Selected

Curriculum-based multi-media technologies on a network in a cooperative learning environment with students' courseware can be used to address the learning styles and learning modalities of the students. In this well-integrated curriculum environment:

- Students learn better when the class activities address all the learning styles and modalities.

- Both the nineteenth century technology, the textbook, as well as the twenty-first century technologies, computers, CD-ROM, TV, cassette recorders, LCD panels, etc. coexist.

- Teachers are trained and continuously receive support, if they are to use multi-media and technologies.

- Parents are involved to have a better home-and-school connection for the

students.

Strategies for Solution Selected

The students in the second-grade class were administered a technology attitude assessment survey before their teacher had attended mini-training sessions and before the class observation visits and had it administered again at the end of the class observation visits.

Before the Practicum and the pre-assessment testing of the students, the teacher had her first-level of Language Arts Training Sessions and follow-up teacher consultation visits that were coordinated by the author for the school district.

During the implementation, the second-level of the school district training, the author's mini-training sessions and the author's class-observation visits occurred. The following were coordinated by the author and performed by different teacher consultants:

- One Language Arts Mini-training Session during the grade-level meeting,
- Three Mathematics Training Sessions,
- Two Multi-media Software Session,
- One Word Processing Session,
- One Quiz Designer Session, and
- Two class observation visits.

The following were performed by the author:

- Ten Learning Styles and Learning Modalities Mini-training Sessions and
- Eight formal class observation visits.

Objectives of Class-observation Visits and Mini-training Sessions

Class-observations visits objectives were:

1) To observe and record the class activities that address students' learning styles and modalities.
2) To observe and record materials and technologies used to address students' learning styles and modalities.
3) To observe students' attitude as they approach their assigned classwork.

Mini-training sessions objectives were:

1) To discuss curriculum requirements in math and language arts.
2) To discuss how technologies maybe used to address learning styles in these subject areas.
3) To make recommendation about learning styles based on research findings.
4) To discuss learning styles research and its relationship to learning outcomes.
5) To discuss students' attitudes and performance during the week between class observation visits.

Procedures Followed

The implementation period was three months, during which the author had meetings and completed activities with the teacher each week.

During the first week three meetings were held with the teacher to discuss the Practicum, its background, its content as it related to the teacher's class, and the teacher's schedule. The teacher also attended a one-day training session on multi-media software. The author began to gather data concerning the classroom software/courseware and technologies.

During the second week, one meeting was held with the teacher to review details of all aspects of the implementation of the Practicum. The teacher spent

two days in class: one day attending a multi-media software package and another day in the morning attending a word processor session and in the afternoon attending a computerized quiz designer session. The author continued collecting data concerning the classroom and school building software/courseware and technologies.

During the third week, a meeting was held to discuss further the teacher's role during the Practicum, and the need for uninterrupted time for mini-training sessions and discussions. The teacher and the author reviewed the district's sponsored in-service training sessions for the teacher and discussed the parents' communications. The author completed the first of the observation visits in the classroom and the mini-training sessions with the teacher. This was also the week of the one-day training on newly installed mathematics courseware for kindergarten thru second-grade classes. The teacher was one of two persons to attend this class.

During the fourth week, the author met with the superintendent and the assistant superintendent of curriculum to discuss the status of the Practicum. The teacher attended a second-grade teachers' mini-training session that was taught by a teacher consultant and coordinated by the author with elementary schools supervisors to discuss the language arts courseware integration in curriculum and class management with learning centers. The author completed the second of the observation visits in the classroom and the mini-training sessions with the teacher.

During the fifth week, the teacher attended with another teacher the second day of the kindergarten thru second-grade mathematic courseware training session that was taught by a teacher consultant. The author completed the third of the observation visits in the classroom and the mini-training sessions with the

teacher.

During the sixth week, a teacher consultant visited the classroom during a language arts lesson. She recorded notes on the class observation sheets. The author completed the fourth of the observation visits in the classroom and the mini-training sessions with the teacher. At the end of the mini-training session the author and teacher had the first formative evaluation session.

During the seventh week, a report was written about the mid-point status of the Practicum and it was distributed to the administrators and the teacher. The author completed the fifth of the observation visits in the classroom and of the mini-training sessions with the teacher.

During the eighth week, the teacher consultant visited the classroom during a mathematics lesson. She recorded notes on the class observation sheets for the author. This week was the sixth week for the author's class observation visit and mini-training session. The author administered the second-grade learning style inventory to the whole class of twenty-two students as a group. Also the teacher attended her third class for kindergarten thru second-grade mathematics courseware.

The ninth week was the seventh week for the class observation visits and mini-training sessions. At the end of the mini-training session, the second formative evaluation session was held. During two of the days this week, the teacher completed the re-assessment of the students by administering the math tests and collecting from the students writing samples.

The tenth week was the eighth week for the class observation visits and mini-training sessions. At the end of the observation visit, the author took photos of the students to send to the parents. (One photo of the whole class and several photos of students grouped with their friends/buddies.) During this

week the technology attitude surveys were administered to the students and teacher for a re-assessment evaluation. The author and teacher met to reviewed the content of the letters and newsletter to the parents. Also, the author met with the superintendent and the assistant superintendent of curriculum to discussed the status of the Practicum.

During week eleven, two meetings were held with the teacher to review and compare the pre- and post-assessment results of the technology attitude assessment surveys, math tests, writing samples, and learning style results and to discuss recognized and unrecognized variables influencing students' feelings, attitudes, and performances and the teacher's feelings, attitudes, and teaching style. This week the author completed the ninth of the mini-training sessions with the teacher.

The twelfth week was the tenth week for the mini-training sessions. After the mini-training session, the third formative evaluation session was held to review the summary reports of the Class Observations sheets, Teacher's Daily Log sheets, Mini-training Sessions notes and assessment results of technology surveys, math tests, writing samples, and learning styles observation notes and inventories.

During the thirteen week, the author had a meeting with the teacher to finalize the newsletter and letters to the parents as well as verify and briefly review all assessments. The author had a meeting with the superintendent to report on the status of the Practicum.

During the fourteen week, the author and teacher had two meetings to review the final drafts of the parents' letters and newsletter and view the photos before mailing them to the parents; and to discuss the dissemination of the results of the Practicum. The author and teacher had a summative evaluation

session to review the 12-week summative results and to discuss the future implementation of learning styles and technologies within her classroom.

Changes During the Implementation

Since there were several meetings with the author and teacher to discuss the Practicum during Weeks 1 and 2, there was no need to review the same material Week 3 without observing the class. Therefore, the class observation visits started a week early (Week 3, instead of Week 4) and the mini-training session was the same day (Week 3 as planned).

After the first mini-training session and class observation visits, two changes were made on the grid of the Observation Sheet and the Teacher's Weekly Log Sheet. It became evident that the 'Audio/visual Material/equipment' line item should be included under both subtitles 'Whole Group' and 'Small Group' instructions. The teacher and the author agreed to make this first change. The teacher made the suggestion for the second change which was to place the 'Paper and Pencil' item under both subtitles on the grids. The author noted another change and added the item 'Student Presentation' under the subtitle 'Whole Group'. Both her grid on the weekly log sheet and the author's grid on the observation sheet were changed to include:

- 'Paper and Pencil' listed under the subtitle for 'Small Group',
- 'Audio/visual Material/equipment' listed under the subtitle for 'Whole Group' and
- 'Student Presentation' listed under the subtitle 'Whole Group'.

Another change was the choice of a learning style instrument for the second-grade students. Although Kolb's learning style theory continued to be discussed, Kolb's LSI was not administered to the students. Instead, a second

grades LSI by Perrin (1991) was used. In the literature shared by the teacher with the author, Perrin's LSI complements Kolb's theory and was a better tool to use with the second-grade students. A time was scheduled to administer the learning style inventory during the eighth week of the implementation.

The author wrote a letter to each of the students' parents. To write about the students' learning experiences in a more comprehensive letter, the author not only used notes/data gathered through class observations and discussion, but also used the results from the learning style inventory. The letter to each of the students' parents discussed the student's learning style and how the parent(s) could assist their child during the summer and, hopefully, throughout the child's educational life by addressing the child's learning style. (See Appendix H for four samples of the letters.)

The teacher was trained on new math courseware. After reviewing the math pre-test scores of her students, she had the students to use the new math courseware to improve their understanding and performance in math. In the process of during this, she created a more stimulating, cooperative technological learning environment.

The Content of the Ten Mini-training Sessions and Four Evaluation Review Sessions (Weeks 3-14)

During each of the mini-training sessions and formative and summative evaluation sessions, the author with the teacher accomplished the following:

Week 3 - Mini-training Session 1 (1 hour)

- Discussed David Kolbs' Learning Styles, learning modalities, and Tylerian's educational learning outcomes; reviewed the management of the learning-stations approach with multi-sensory activities based on theory; and reviewed

with the teacher the notes written on the Class Observation Sheet.

Week 4 - Mini-training Session 2 (1 hour)

- Discussed and emphasized Kolbs' concept of concrete experiences and learning modalities concepts as they related to cooperative/collaboration multi-modalities learner-centered experiences; reinforced what had been taught concerning multi-media technologies integration techniques with the learning center approach; reviewed with the teacher the notes written on the Class Observation Sheets and the Teacher's Weekly Log Sheet; and reviewed the outline of the letter to the parents about learning styles.

Week 5 - Mini-training Session 3 (1 1/2 hour)

- Discussed and emphasized Kolbs' abstract and the learning modalities concepts as they related to two of the four learning centers in the classroom; reviewed with the teacher notes written on the Class Observation Sheets and Teacher's Weekly Log Sheet; and discussed the letter to the parents.

Week 6 - Mini-training Session 4 and Formative Evaluation Review 1 (1 hour)

- Reviewed literature about the importance of learning styles; discussed learning modalities concepts as they related to two of the four learning centers in the classroom (see Table 3); reviewed the notes on the Class Observation Sheets and Teacher's Weekly Log Sheet; discussed the newsletter and letter to the parents; and discussed the choices of learning style inventory for the second-grade students.

Week 7 - Mini-training Session 5 (1/2 hour)

- Discussed learning styles and learning modalities relationship to learning outcomes; reviewed notes written on the Class Observation Sheets and the Teacher's Weekly Log Sheet; and discussed the new approach that has been

implemented by the teacher. (The teacher decided to have the students choose their own small groups for team work with about two exceptions. Two students seem to work better in groups assigned to them by the teacher.)

Week 8 - Mini-training Session 6 (1 hour)

- Reviewed the students' learning styles inventory results and related it to the classroom experiences, and then discussed the letters and newsletter to be sent to the parents.

Week 9 - Mini-training Session 7 and Formative Evaluation Review 2 (1 1/2 hours)

- Reviewed the post-assessment tests and overall changes in scores of the students' math competency tests, writing skills assessment, and technology attitude survey and the students' comments; and discussed the newsletter that will be sent to the parents.

- Reviewed writings skills and learning styles of each of the students and the affect of addressing the different learning styles when giving classroom instruction; finalized the selection of best writing samples for each of nine units in IBM Writing to Write in the newsletter to the parents; and reviewed each letter to each child's parents.

- Reviewed and discussed a summary chart of the Kolb's Learning Styles with IBM/EduQuest TLC Learning Center Approach elements, learning modalities, learning activities, and Tylerian's learning outcomes. (see Table 3).

Week 10 - Training Session 8 (1 hour)

- Discussed the learning style inventory as it related to technologies in the classroom and to the students at home; and discussed the letters, newsletter and photos to the parents.

Week 11 - Mini-training Session 9 (2 hours)

- Reviewed Class Observation Sheets of the teacher consultant and the author and Log Sheet of the teacher; discussed the summary chart of learning styles with modalities, activities, and outcomes (see Table 3); discussed the changes in the teacher's approach when instructing small groups and the effect

Table 3

A Summary of the Learning Styles with Learning Modalities, Activities, and Outcomes

Kolb's Learning Styles	TLC Learning Center Approach	Listening Modalities	Learning Activities	Tylerian's Learning Outcomes
Diverger (creative) Intellectual Converger (practical) Assimilator (integrative) Accommodator (adaptive/intuitive)	Small group	Audio, visual, tactical, oral, motor	Reading, listening, writing, speaking, using technology	skills, cognitive strategies, verbal information, attitude, motor skills
Diverger Accommodator	Cooperative	Audio, tactical, motor, visual, oral	Reading, writing, using technology, listening speaking	Intellectual, skills, cognitive strategies, verbal information, attitude, motor skills
Converger Assimilator cognitive	Active Learning	Audio, visual, tactical, oral, motor	Reading, listening, writing, speaking, using technology	Intellectual, skills, strategies, verbal information, attitude, motor skills
Diverger Converger Assimilator Accommodator	Technology	Audio, visual, tactical, oral, motor	Reading, listening writing, speaking, using technology	Intellectual, skills, cognitive strategies, verbal information, attitude, motor skills

Note. The author prepared this table after reviewing the literature about Kolb's Learning Styles, IBM/EduQuest's Teaching and Learning with Computers Approach, and Tylerian's learning outcomes.

of the change on the performance of the students in the class; and reviewed the letter, newsletter, and photos to the parents.

Week 12 - Mini-training Session 10 and Formative Evaluation Review 3 (4 hours)

- Reviewed the final draft of the newsletter, the individual letters to parents, and the selection of photos to be enclosed with the letters; reviewed the letter the author wrote to the teacher concerning the teacher's learning style and teaching style; and discussed the changes in the teacher's instruction during the implementation by the extensive use of technologies to address learning styles, especially in small groups.

Weeks 14 - Summative Evaluation Review (2 hours)

- Discussed the extrinsic (effect of the program) and intrinsic (the internal characteristics of the program) criteria and the evaluation of them; reviewed the learning style inventory results of the students and the teacher; discussed the application of using technologies in this second-grade class and the use of the inventory in future classes; discussed the technologies used daily during the class for the seven weeks as shown on the teachers log and as indicated on the author's eight class observations sheets and teacher consultant's two observations sheets; discussed how the changes affected the students' feelings, motivation, attitudes, and performance as well as the teacher's feelings, attitudes, and teaching style; reviewed and summarized the ten mini-training sessions' activities and the three formative evaluation sessions' discussions; made plans with the teacher to continue to work with learning styles in future second-grade class, to share the information and a newsletter with the parents as well as to share the information with other teachers in the district; and made plans for the author to share the results with the school district's administrators and IBM/EduQuest personnel.

CHAPTER V

RESULTS, DISCUSSION, AND RECOMMENDATIONS

Results

The teacher was not using activities and strategies to address all the learning modalities and learning styles of the students in the second-grade classroom. The teacher is using more of a variety of activities and technologies to address the learning styles and learning modalities of the students in the second-grade classroom.

The observation sheets from an hour visit during Weeks 3 - 10 by the author indicated changes in teacher's presentation (teaching style), more small group activities, and technologies used during the visits. (See Table 4 for a summary of the author's class observations with technologies used.) During the four of the eight visits language arts was the lesson being taught; during two of the visits there was a lesson transition from math to language arts; during one visit math was being taught; and during the last visit the teacher and students were performing activities summary of the year-end activities.

During the first session's question and answer period, the teacher stated that she had used the learning styles, especially over the last year when the

Table 4

Summary of the Author's Eight Observation Sheets during the Second-Grade Class Visits

Instructional Medium within Whole vs. Small Group Instructions	Percentage of Instructional Time							
	Weeks							
Teaching Methods	1	2	3	4	5	6	7	8
Whole Group	40%	37%	10%	20%	17%	45%	3%	50%
- Lecture	20	37		20	17	20	3	50
- Student Presentation	5							
- Chalkboard						25		
- TV or Movie								
- Paper-Pencil								
- Manipulatives	15							
- Computers				x				
- Audio/Visual Materials or Equipment								
Small Group	60%	63%	90%	80%	83%	55%	97%	50%
- Textbooks						x		
- Paper-Pencil		30			62	x	97	
- Peer Interaction	x*	x		25	x	x	x	42
- Computers	x	33		55		55	x	
- Manipulatives				x	21		x	
- Audio-Visual Equipment			90					8

Note. Recorded is the percentage of time of whole vs. small group instructions;

*The x represents a shared amount of time spent with this activity while performing other activities in either of the small or whole group.

learning center approach was emphasized in the curriculum. She had successfully used computers, chalkboard, film strips, manipulatives, posters, books, worksheets, bulletin board, charts, etc. She stated that technologies were necessary for successful instruction. However she felt that she could learn more and apply the theories more fully. As she taught, she considered learning styles. Her learning style approach included visual, auditory, tactical, and oral presentations. After the eight weeks of class observations and ten mini-sessions, the teacher stated that she used computers, small groups, peer interaction, TV, overhead, film strip, cassette players, and art supplies. These tools were very successfully used to address learning styles.

During the class observation visits, the teacher and students were involved in an interactive environment. Before each lesson the students were assembled as a whole group on the floor (sitting in chairs and standing were optional) when introduced to the topic by the teacher whether it was math or language arts. Visual aids were used with or without technology. After the presentation of the lesson, the actual lessons did include computer technology as one of the stations. The students seem to find learning enjoyable. The teacher gave students immediate feedback as they worked. Even during whole class activities there was movement that allowed for the students to have cooperative and independent learning activities. The students were given concrete learning experiences in the form of time on computers, creating art projects that related to the lessons, seeing charts, using paper, crayons, pencils, markers to make items that related to the topic being discussed. During the eight weeks of observations, the author noticed that she became more conscious of addressing the needs of all the students more fully. During all fourteen weeks, the author noted that the teacher began to incorporate the learning styles information by

more fully using technologies in her second-grade class, in preparation for teaching future second-grade classes and in preparation for teaching the classes of second-grade and third-grade teachers within the district. The students changed groups freely as they completed different assignments. They appeared as comfortable with computers as paper and pencils. Also, there was a sense of the students having more self-confidence and having higher self-esteem as they completed each assignment alone or in small or large group. The teacher had been and was always well prepared and any technologies that she used was tested by her before it was used with and/or by the students. She responded knowledgeably to any question about any lesson, technology, or student. All learning modalities were addressed in most of the activities.

The teacher consultant agreed to schedule two one-hour visits to observe the teacher and complete the observation sheets while observing. Because of a conflict in her schedule, one of the visits was 45 minutes. Before each class observation visit, the consultant talked with the author. During the visits, she took notes and completed the observation sheets. After the visits, she gave the sheets to the author. The teacher consultant's visits were for an hour during Week 6 and 3/4 hour during Week 8. The activities during those visits were similar for language arts and for mathematics: whole group instruction and then small group instructions when students worked in cooperative groups or with a partner at all areas. During the language arts lesson on the first visit, the teacher consultant noted that the teacher instructed by eliciting responses with higher-order questions. Also, the students and teacher were in an interactive environment that included technology. During the mathematic lesson on the second visit, it was noted that the teacher again went from whole group instruction to model the lesson to having the students in small groups with paper

and pencil as well as computers. (See Table 5 for a summary of the teacher consultant's observation sheets with technologies used.)

Table 5

Summary of the Teacher Consultant's Two Observation Sheets during the Second-Grade Class Visits

	Percentage of Instructional Time	
Instructional Medium within Whole vs. Small Group Instructions		
Whole Group	33.3%	33.3%
- Lecture	x	x
- Student Presentation	x	x
- Chalkboard		
- TV or Movie		
- Paper-Pencil		
- Manipulatives		
- Computers		x
- Audio/Visual Materials or Equipment	x	
Small Group	66.6%	66.6%
- Textbooks		
- Paper-Pencil		x
- Peer Interaction	x	x
- Computers	x	x
- Manipulatives	x	x
- Audio-Visual Equipment		

Note. Recorded is the percentage of time of whole vs. small group instructions;

*The x represents a shared amount of time spent on all the activities in whole group activities or the small activities.

The daily logs kept by the teacher during Weeks 3 - 10 is summarized by week to show changes in the whole group versus small group instruction and the use of technologies during the class time. This log was completed to reflect technologies used for all activities and subject areas during each day. (See Table 6 for a summary of the teacher's weekly log sheets with technologies used.)

Table 6

The Teacher's Weekly Log Data Sheets Summarized by Week

(Weeks 4 - 10 of Implementation)

	Percentage of Instructional Time						
Instructional Medium within Whole vs. Small Group Instructions	Week						
	1	2	3	4	5	6	7
Whole Group	50%	52%	50%	43%	40%	30%	32%
- Lecture	20	14	14	15	15	4	
- Student Presentation				2	9		
- Chalkboard	3	5	5	4	4		4
- TV or Movie	1				6	4	20
- Paper-Pencil	19	11	14	9	4	14	8
- Manipulatives	3	8	7	2	2	3	
- Computers	4	12	8	10			
- Audio/Visual Materials or Equipment		2	2	1		5	
Small Group	50%	48%	50%	57%	60%	70%	68%
- Textbooks	4	10	7	9	2		9
- Paper-Pencil	10	10	7	14	12	16	14
- Peer Interaction	10	10	10	10	12	30	20
- Computers	22	14	18	11	20	22	19
- Manipulatives	1	4	8	9	13	2	4
- Audio-Visual Equipment	3			4	1		2

Note. Recorded is the percentage of time of whole vs. small group instructions.

Observations of the students' learning styles were shared with the teacher during mini-training sessions and the results are shown in Table 7.

Table 7

Learning Styles of the Students and the Teacher based on Observations and an Instrument:

		Observations		
	Converger	Diverger	Assimilator	Accommodator
Boys	0	5	2	2
Girls	0	2	4	6
Total Students		7	6	8
Teacher				1

The observations of the students were discussed with the teacher and based on her knowledge of the students during the school year and the description of the Kolb's Learning Styles, she agreed with the results. Observations were also discussed concerning the teacher's learning and teaching styles. Then later the Kolb's Learning Style Inventory (Kolb, 1971) was administered. The results of the observations and learning style inventory were different. The LSI results for the teacher indicated she was a converger and an assimilator.

The second-grade learning style inventory was administered to the students after reading to them the book, Elephant Style (Santora & Perrin, 1982). The reading of the book prepared the students for the inventory. Amato (1990) studied the effectiveness of the book and concluded that it helped the students respond to their learning style preferences versus respond as expected by their parents and

teachers. Although Perrin (1991) stated as a suggestion that the LSI be administrated individually, the author administered to the whole class as a group. Each student had an answer sheet on which they recorded their answers. The results of the LSI for the students and teacher are shown in Table 8. For consistency and for a comparison, the same LSI was administered to the students and the teacher.

Based on the LSI most of the students learned best in an environment with sounds, low lights, cool temperature, informal setting, work alone or with peers. They needed little structure; are responsible and persistent; are motivated by adults; are visual learners; do not require food while learning; and work best in the afternoon. The teacher was similar to most of the characteristics (low lights, informal design, little structure, responsible and persistent, visual perception, no intake of food, require no mobility, and best learning in the afternoon) and was different with others characteristics (little noise, warm place, work alone, and self-motivated). (See Table 8 for the summary of the students' and the teacher's learning style characteristics.)

Overall Assessments Results

The overall outcomes related to the teacher and the students were, in most cases, better than the expected results. The expected results were that the second-grade students would show evidence of improvement with higher positive technology attitude assessment survey scores and with better writing and math skills after the implementation of the proposal when there had been changes in the classroom instructional activities and strategies to address the learning styles and modalities.

Table 8

A Summary of the Students' and Teacher's Learning Style Characteristics Results based on a LSI:

Perrin's Learning Style Inventory (1991)

	Environmental							
	Sound		Light		Temperature		Design	
	Accepted	Not Accepted	Low	High	Low	High	Formal	Informal
Boys	6	4	6	2	1	9	0	10
Girls	11	1	9	3	1	11	3	9
Total	17	5	17	5	2	20	3	19
Teacher		1	1			1		1

	Sociological		
	Sociological		
	Alone	Adult	Peers
Boys	3	0	7
Girls	8	.5	3.5
Total	11	.5	10.5
Teacher	1		

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Table 8 (continued)

	Emotional									
	Structure		Responsible		Motivation					
	Needs	Needs Little	No	Yes	Teacher	Adult	Self	Not-Motivated		
Boys	3	7	1	9	2.33	5.66	1.66	.33		
Girls	3	9	2	10	2.33	6.33	2.33	1		
Total	6	16	3	19	4.66	12	4	1.33		
Teacher		1		1			1			

	Physiological											
	Perception				Intake		Mobility		Time			
	Tactical	Auditory	Visual	Kinesthetic	No Intake	Intake	Not Required	Required	AM-Time	Noon-PM-Time	Night-Time	
Boys	2.5	1	4.5	2	3	7	5.5	10	2.5	5	2.5	
Girls	3.5	3.5	3	2	9	3	4.5	2	1.5	6.5	4	
Total	6	4.5	7.5	4	12	10	10	12	4	11.5	8.5	
Teacher			1		1		1			1		

Technology attitude assessment survey

On the technology attitude assessment survey the second-grade students' scores were expected to show a one point improvement in all the survey items that did not already have the highest ratings.

The students' scores on the technology attitude assessment survey overall had similar number of positive responses which was 66% for the pre-implementation of the Practicum and 63% on the survey at the end of the implementation. Of the 35 items a positive class response was considered when more than half of the class responded positive to an item. For a negatively phrased question, the positive response was no (items 4, 9, 14, 17, 21, 22, 26, 28, 30, 33, 34, and 36) and for a positively phrased question, the positive response was yes. (See Table 9 for the technology attitude assessment survey results.) There were questions/items that did not have the highest positive score on the pre-test and had the same or similar responses on the post-test. However, there were more positive answers per question. Overall on the post survey, the cumulative number of positive responses from all the students was 78 and the cumulative number of negative responses were 43. The difference was 35 positive responses for the 35 questions.

It was expected that the teacher's survey would show a 20% change in positive responses. i.e,.strongly agree and very often. The teacher survey showed a 50% change. There were 26 responses that had changed on the teacher survey administered at the end of the implementation. This was 30% better than was expected for the teacher. Of the 26 responses there were four questions that had a two point change. (from Occasionally to Very Often or from Disagree to Strongly agree). These were items 8, 9, 21, and 50. (See Table 10 for the teacher's technology survey results.)

Table 9

Technology Attitude Post-Assessment Survey Results from the Second-Grade Students

General Responses	Choices		
	Yes	No	Not Sure
1. What grade are you in? 2nd grade			
2. I am: 12 girls			
9 boys			
3. I enjoy being at school.	10	4	7
4. School work is boring.	6	13	2
5. I like to learn new things.	19	0	2
6. I like to use the computer.	19	1	1
7. I tell my parents about the work I do on the computer.	18	3	0
8. I tell my friends about the work I do on the computer.	12	8	1
9. I feel confused when I use the computer.	9	9	3
10. Things I learn on the computer help me with my classwork.	18	3	0
11. My teacher helps me when I do not understand something on the computer.	19	1	1
12. My grades are better since I began using the computer to learn.	11	4	6
13. I am proud of the work I do on the computer.	17	1	3
14. Using computers is a waste of time.	2	19	0
15. I like doing math word problems.	14	7	0

16. Schoolwork is easy for me.	18	2	1
17. Computer work was fun at first, but then it got to be boring.	7	14	1
18. I like reading stories.	17	3	1
19. I like playing word games.	17	3	1
20. The computer quickly tells me if I get the correct answer.	16	5	0
21. When I do not get the correct answer, the computer usually does not give me enough help.	6	15	0
22. Working at a computer makes me feel separated from other kids.	2	19	0
23. When I do not understand something on the computer, I work until I figure it out.	19	1	1
24. When I do not understand something on the computer, I get help from other students.	16	3	2
25. It is easy for me to do math problems.	17	2	2
26. I did not like using the computer in school this year.	5	16	0
27. When I do not understand something, the computer helps me out.	15	3	3
28. Schoolwork is hard for me.	0	20	1
29. When I do not understand something on the computer, I like to ask for help.	9	11	1
30. I do not care whether or not I use computers ar school.	10	11	0
31. I can type without looking at most of the letters.	15	6	0

32. I use a computer outside of school for fun.	17	4	0
33. When I type, I can find some of the letters but it takes sometime.	7	14	0
34. I am just beginning to learn to type on the computer.	1	20	0
35. When I do not understand something on the computer, I can get help from my teacher or another adult.	17	2	2
36. I use a computer outside school for learning activities.	12	8	1
37 I like using computers in school.	19	1	1

38. Which is your easiest subject:[a]

Reading and Language Arts 4 Science 9 Math 6 Social Studies 0

39. Which is your hardest subject:[a]

Reading and Language Arts 8 Science 2 Math 2 Social Studies 5

Essay

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40. What do you like MOST about using computers at school?

Some comments by the students: Math. Everything.

41. What do you like LEAST about using computers at school?

Some comments by the students: Nothing. Math.

42. What WORDS would you use to tell about this year in school?

Some comments by the students: Fun. Writing. Math.

Note. From IBM, New York State Education Department, & the University of the State of New York. (1993). IBM/NY State Education Department joint study. Unpublished manuscript. Revised by Brick Township School District (1994).

[a] n = 21 of 22 were present and some students did not respond because of the change in the choices of letters for the multiple choice answers.

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Table 10

Technology Attitude Post-Assessment Survey Results of the Teacher of the Second-Grade Class

		Choices			
	General Responses	Never	Occasionally	Very Often	Often
1. Education level:	Bachelor's				
2. Total Years Teaching	More than 20				
3. Grade level	2-3				
4. I am	Female				
Over the past year how often did you use technology?					
5. As a teaching tool for instruction in Language Arts?	Very Often				
6. As a teaching tool for instruction in Mathematics?	Very Often				
7. With a word processor for personal work?	Very Often				
8. With word processing or other program for preparing tests or assignments?	Very Often				
9. With word processing or other productivity software for other professional tasks?	Very Often				
10. In a program for entering or calculating grades?	Often				
11. In a graphics or drawing program?	Very Often				
12. In game or simulation software?	Often				
13. With a modem for telecommunications?	No				
14. Do you have a computer at home?	Yes				
15. What type of computer do you have?	Other				
16. Do you have a modem?	No				
17. How long have you been using your computer?	More than 5 Years				
18. You talked about computers or technology related issues to other teachers or staff members?	Very Often				
19. Your advice on computers was sought by other teachers?	Very Often				
20. Technology was a topic of conversation among	Very Often				

students in your presence?

21. You were present when a principal or administrator talked about computers or technology related issues? — Very Often

22. Teachers worked together to plan for more effective use of technology? — Often

23. In the last school year, approximately how many hours did you spend in formal training to use computer or other technologies? — 41-50

24. In the last school year, approximately how many hours did you spend learning to use a computer or other related technologies on your own time? — 41-50

25. What was your initial reaction to the period of formal training in the use of Technology? — Overwhelming

26. I would like to get better at using the computer to: (Select the ones that are applicable) - — All were selected

    A. Evaluate student achievement
    B. Encourage independent learning
    C. Encourage independent problem solving
    D. Individualize instruction
    E. Monitor basic skill building

Choices

Strongly Agree	Agree	Disagree	Very Disagree

Please respond to the following:

27. Since the addition of computers in my classroom, I have changed my teaching methods. — Strongly Agree

28. The use of computers allow me to individualize instruction. — Strongly Agree

29. Since computers were added to my classroom, I encourage more cooperative learning among the students.	Strongly Agree
30. It is difficult for me to coordinate the use of the computer software with my curriculum.	Strongly Disagree
31. Since the addition of computers in the classroom, I use my time more efficiently.	Agree
32. Discipline problems are decreased since I began using the computers.	Agree
33. The use of the computers in my classroom has become an important administrative tool.	Agree
34. Students do not show transference of skills from computer assignments to their classwork.	Strongly Disagree
35. Having computers in my classroom allows me more time to devote to the individual needs of my students.	Agree
36. Since computers were added to my classroom, I have become better at identifying student weaknesses/strengths.	Agree
37. The use of computers in my classroom has become an important part of my instructional program.	Strongly Agree
38. Computer use should be expanded in my classroom.	Strongly Agree
39. My students should spend more time using computers next year.	Strongly Agree

Do you feel that the use of computers and related technologies in your classroom helped/improved the following?

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40. Student attention	Agree
41. Student concentration	Agree
42. Student request for help when needed	Agree
43. Student problem solving	Agree
44. Student independent learning	Agree

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45. Student achievement	Agree
46. Student attitude toward learning	Strongly Agree
47. Student attitude toward school	Strongly Agree
48. Student management of time	Agree
49. Students learn more quickly.	Agree
50. Students learn about things they otherwise would not be exposed to.	Strongly Agree
51. Students get immediate feedback.	Strongly Agree
52. Students are motivated to practice new skills.	Strongly Agree
53. Students practice and learn basic skills more.	Strongly Agree
54. Students have better retention of facts.	Agree
55. Students who learn faster are more challenged.	Strongly Agree
56. Students who learn at a slower rate can progress at their own pace.	Strongly Agree

Essay

57. Additional Comments: "With more computers, I could accomplish more in less time and have more time for individual attention to students. Class size must be kept small."

Note. From IBM, New York State Education Department, & the University of the State of New York. (1993). IBM/NY State Education Department joint study. Unpublished manuscript. Revised by Brick Township School District (1994).

Mathematics skills assessment

According to the second-grade teacher in math at the end of the implementation, she expected the students to be proficient in addition and subtraction of two-digit numbers with and without regrouping and to be able to understand beginning fractions, measurement, and beginning multiplication and division. These results were evident on the written school work and tests administered at the end of the implementation as well as the computer courseware data collected at the end of the implementation.

The teacher expected that the math skills tests would show that the students were beyond measurement with non-standard units (which was the accomplishment of her class the last school year).Three math tests were administered during the last week of observation: the enrichment test covered subtraction with re-grouping with two-digit numbers (Manfre, Mosser, Labato & Morrow, 1992, p. 238); the cumulative test covered multiplication problems with sets of two-digit numbers, multiplication sentences with sets of one-digit numbers, subtraction problems with sets of two- and three-digit numbers, and subtraction sentences with sets of two-digit numbers (pp. 383-384); and the mid-chapter test covered addition with two-digit and three-digit whole and decimal numbers (p. 360). On the tests in mathematics, the enrichment test had 13 students scored higher and 8 students scored lower; the mid-chapter test had 14 students scored higher and 7 students scored lower; the cumulative test had 18 students scored higher and 3 students scored lower. (See Table 11 for the math tests results.) The students performed beyond the expectations of the teacher and the author by mastering three-digit whole and decimal numbers in addition and three-digit numbers in subtraction.

Although students were taught fractions, measurements, and division in the courseware on the computer, the teacher and the author expected the gains to be exposure to fractions, measurements, and division. Therefore, these competencies and gains in these math competencies were not tested.

Table 11

Pre- and Post-Mathematics Tests Results of the Second-Grade Students

Students	Tests Administered								
	Enrichment			Mid-Chapter			Cumulative		
	Pre-test	Post-test	Difference	Pre-test	Post-test	Difference	Pre-test	Post test	Difference
A	95	100	5	95	86	-9	91	91	0
B	80	65	-15	40	67	27	77	89	12
C	100	85	-15	95	86	-9	94	94	0
D	70	70	0	81	52	-29	87	87	0
E	90	75	-15	67	62	-5	49	79	30
F	100	100	0	95	95	0	85	91	6
G	80	100	20	100	100	0	98	94	-4
H	80	85	5	70	70	0	79	85	6
I	70	65	-5	35	90	55	72	94	22
J	60	45	-15	86	86	0	62	87	25
K	90	95	5	86	90	4	87	94	7
L	80	100	20	86	80	-6	89	85	-4
M	95	70	-25	95	90	-5	89	89	0
N	85	100	15	90	86	-4	94	96	2
O	50	50	0	50	86	36	85	81	-4
P	95	90	-5	80	90	10	89	89	0
Q	90	95	5	86	95	9	91	94	3
R	70	95	25	75	90	15	74	87	13
S	100	100	0	86	95	9	70	87	17
T	50	50	0	5	95	90	72	95	13
U	85	75	-10	20	70	50	66	89	23
Total	1715	1710	-5	1523	1761	238	1700	1867	167
Average(mean)	81.67	81.43	-0.24	72.52	83.86	11.33	80.95	88.90	7.95
Average Difference in Scores			-0.24			11.3			7.95

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Writing competence assessment

In language arts, particularly writing skills, the teacher wanted the students at the end of this implementation to be able to tell about an important incident in sequence using expanded sentences and to write expressions with feelings. She also expected them to understand nouns, adjectives, and verbs. During the writing competence assessment at the end of the class observation time, she expected the students' writings to show that they had improved in their overall expression, length, creativity, and content while remaining to use poetry and prose with compound and complex sentences. Since they used IBM Writing to Write (trademark of International Business Machines Corporation and developed by Dr. J. H. Martin) Form I as their full-language arts program, she expected the students to be on or complete WTW Unit 8 - Narration. To complete unit 9 the students would have been taught and understood nouns, adjectives, and verbs and writing prose and poetry using simple, compound, and complex sentences in addition using expressions with feelings. As stated by Martin (1991),

> Unit 8, Narrative, asks students to write a story about something that happened to them. While this composition requires students to 'tell the facts,' that is, who, what, when, where, and why, the narrative must include information about how the student was feeling during this event (p. 4).

The students fulfilled these objectives and then went further by completing Writing to Write (WTW) Unit 9 and starting WTW Unit 10. As stated by Martin (1991), "Unit 9, Persuasion, introduces students to the strategy of presenting facts to change a reader's mind. Students are challenged to draft a fact-based argument to persuade readers to change their ideas concerning a common misconception." Since the class only started unit 10 of WTW, there were no

writing samples completed by the students. These accomplishments were more than were expected by the author and the teacher. The results were not only narrative writings with feeling, by also writings of persuasion (see Appendix I with samples of the student's writings from each unit).

During the author's observations, it was noted that communication skills were being further enhanced through the peer interaction and small group work that were organized and planned for shared cooperative assignments. The classroom design that included learning centers for listening, reading, writing, and speaking in small groups also enhanced the cooperative interactions.

Unexpected Events or Spin-offs

Since the teacher was very curious about the practicum, there were more meetings the first three weeks then initially planned. During the second mini-session, the author shared with her an article by Kolb (1981). After this mini-session, the teacher took the initiative to do research. During the fourth mini-training session which was a session for the author to bring additional articles to share about learning styles, the teacher also brought in articles and journals about learning styles. After reviewing that literature, the author decided to investigate and purchase a different learning style inventory to administer to the students. This was purchased, reviewed, and administered to the second-grade students.

Because of the design and the content of both the newsletter and the letter to the parents, there were more meetings the last few weeks than planned.

The cumulative math test had two parts, the part on estimating was not included in this report, since it did not directly relate to the goals that the teacher had set for the students in math during this period.

During the implementation, certain outcomes in different areas were expected as a result of the mini-training sessions with the teacher. There were four areas: technology attitude assessment survey for the students, technology attitude assessment survey for the teacher, math competence for the students, and writing skills for the students. There were unexpected results in three of these areas. On the technology attitude assessment survey the second-grade students' scores did not show a one point improvement in all the survey items that did not already have the highest ratings. It did show more students responding positive to questions that had positive responses given by other students. The overall number of positive responses did increase. The teacher survey did not show a 20% change in positive responses; instead, it showed a 50% change in positive responses. This was 30% more than expected. In math the students' performance was unexpected when the student mastered three-digit numbers for the operations addition and subtraction and three-digit numbers with decimals in addition. In writing skills the students went beyond writing narrative with feelings to writing composition of persuasion. In fact, they were expected to complete IBM Writing to Write Level I Unit 8 and they completed WTW Unit 9 and started WTW Unit 10.

As part of the implementation a letter was to be written to the parents to discuss their child's learning style and some results of the child's school work. (See Appendix H for four samples of the letters.) After reviewing weekly the results of the students's work with the teacher, the author decided that samples of all the students' writings should be shared with all the parents in the form of a newsletter to accompany the letter. As a result a newsletter that described the language arts program and nine units within that program with two samples of students' writings for each unit was designed by the author, implemented by the

teacher, and reviewed by both. (See Appendix I for a sample of the newsletter to the parents.) To better demonstrate whole and small groups concepts for instructions, two photos were enclosed with the letter: one photo of the whole class and one photo of pals/buddies of that student.

Each week as the students were participating in the classroom activities, there seem to be more excitement then the week before. The teacher was creating a stimulating, cooperative learning environment. Since a 'picture is worth a thousand words', the author decided to include the photos of the whole class as a group and the several small groups or teams of students. The letter then would refer to the newsletter and the photos that would be included. The parents would have a letter about learning styles, writings that were prepared when using a program that addressed all the learning styles, and photos of their child with the whole class and with his/her team during class work.

Within two weeks after the letters were mailed, the teacher received a letter from a parent and a call from another parent to thank her for the letter. Both of the parents stated that they would definitely save the sheets on their child's learning style.

Three things were unexpected about the teacher's actions and attitude: she immediately used new concepts, courseware, and technologies with her students and immediately used the tool(s) or software for herself that she was trained to use in classes or mini-training sessions; she significant changed her attitude about technology as reflected on the post-technology attitude assessment survey; she decided to use the learning styles instrument every year with her students and to more consciously collect more articles; and she liked the newsletter design and content and she decided to use it as part of training sessions that she would instruct for the language arts program, IBM Writing to

Write, for both second-grade and third-grade teachers.

The number of inquiries from teachers, administrators, and other doctorate students about the Practicum's implementation and its potential results was unexpected. One or maybe two of these doctorate students plan to do their dissertations on a similar topics and a portion of this content.

Discussion

The goal was for the second-grade students covered three areas: 1) to show higher positive technology attitude assessment survey scores, 2) to produce better writing and 3) to improve math skills. The change were to be caused by the additional changes in the classroom instructional activities and strategies to address the learning styles and modalities. The technology attitude assessment survey was discussed in the unexpected results. Overall the number of positive points were higher than expected which means more students responded positive to certain items; however, the number of items that had changed to positive were not as expected. The math competency and writing skills showed improvements. Their math skills assessment showed that they went beyond measurement with non-standard units (which was better than her second-grade class accomplished the last school year). The writing competence assessment showed that the students improved in their overall expression, length, the creativity and in the content of their writings while remaining to use poetry and prose with compound and complex sentences. As discussed in the unexpected results, the students met this aspect of the goal and went beyond.

In mathematics, the teacher expected the students to be proficient in addition and subtraction of two-digit numbers with and without regrouping. She

expected the students to be able to understand the basics of fractions, measurement, multiplication, and division. These expectation were met and more as explained in the unexpected results.

In language arts, particularly with writing skills, the teacher wanted the students to be able to tell about an important incident in sequence using expanded sentences. She expected them to use feelings and to understand nouns, adjectives, and verbs. Since they used IBM Writing to Write Form I as their full-language arts program, she expected the students to be on or complete Writing to Write Unit 8 - Narration. The students did this. Then they did more as explained in the unexpected results.

Recommendations

The recommendations for addressing the learning styles and learning modalities of the students are to have teachers training sessions about learning styles and technologies, to have the technologies that address these learning styles, and to administer learning style inventories/instrument to the students and then communicate to parents the learning styles of their children.

Training

Training is important to the success of the implementation of an educational program. Training and follow-up visitation are needed and should be provided for all teachers that participate in a new program. In additional to curriculum courseware, training sessions should be given on learning styles with a introduction that includes information and an instrument or an inventory for the teachers to understand more about their learning styles and teaching styles.

To accelerate the process of using technologies and interactive, integrated curriculum courseware as well as models of learning, training programs are needed that include the new technologies. The results of surveys that have been given to teachers have indicated that teachers felt that if they were well-trained in the effective uses of computer technology, they would be more creative in their use of computers in their classroom instructions. They also believed that computers would give them more one-on-one time with their students.

Learning Style Inventory

Teachers need to use age-appropriate learning style inventory with the students and/or take notes based on learning style theorists. This will enable them to learn more about the students, better group the students in the classroom, and address their learning styles.

Technology

With the nineteenth century technology, the textbook, the twenty-first century technologies, i.e., the computer, should also be used. Why? It provides what textbook cannot provide which is the ability to have motion-video and sound and the interaction with the courseware. It aids in presenting lessons in forms that appeal to all the senses, making use of our powerful human ability to recognize patterns by sight, sound, and touch. It enhances the learning process for the students and allows the teacher to be a facilitator of that learning process.

It is important that the teacher has a positive attitude toward technology and use the technology so that she can and is able to use technology to address the learning styles of the students. When technologies are used by the teachers, the

teachers need to explore the various functions of the technologies within the classroom. For example, all four functions of computer technology should be used: for learning with hands-on experience for the students; for performing tasks by providing examples, help, and orally explaining a lesson; for providing instruction to assist the teacher in presenting a lesson; and for managing instruction which is keeping track of a lesson performed by a student and providing the details to the teacher.

The students interacting with technologies improve the quality and increase the quantity of time on task. Technologies help students maintain a retention of instruction because they address the students' learning styles and modalities. Computer technology improve the rate of learning because of the individually-paced instruction. This was evident by the fast pace in which this second-grade class completed nine of the ten units in the language arts program.

Communications to Parents

It is important to keep parents informed. Letters to parents and/or newsletter of results of the class lessons or activities give the parents a overall review of the child's work and that of other students in the classroom. The parents are needed to support the child's learning process.

Dissemination

The school district is interested in the results of this practicum; therefore, the author will be sharing it with the school district's administrators. The author will also be sharing it with the EduQuest/IBM personnel (especially the persons responsible for the courseware Writing to Write), various school districts, board

meetings, and technologies users groups meetings as well as each of the teachers and administrators who have requested a copy.

The author plans to write journal articles about different aspects of the Practicum.

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APPENDICES

APPENDIX A

CONSENT LETTERS

To Whom It May Concern

Subject: Brick Township School District's Mission Statement

I give Viola Stalling permission to use the Brick Township School District's Mission Statement as an example of a mission statement for a school district in her doctorate studies.

Signed: [signature]

Title: Assistant Superintendent

Date: 8/3/93

To Whom It May Concern

Subject: Brick Township School District's Attitude Survey

I give Viola Stalling permission to use the Brick Township School District's Attitude Survey that was adapted from the IBM and New York State's Education Industry Survey. We received permission to adapt it to our schools' need and now give Viola Stallings permission to use as is for her study, or if necessary, modify the parts that she needs.

Signed: Bruce Rumsey

Title: Assistant Superintendent

Date: 10/13/93

APPENDIX B

MISSION STATEMENT FROM SCHOOL DISTRICT I

The School District I's Mission Statement

Surrounded by instability including, the changing demographics in families, the rapid change in skills needed to succeed in an adult work environment and the insufficient resources in education to address these changes, today's learner has a difficult path to follow on their journey into the 21th century. The information they must learn has doubled. Industry is constantly remarking that today's youth are not being prepared for the world of work and research.

Mission Statement

The vision of the ... Public Schools is that ALL STUDENTS will be able to use the tools of educational technology, effectively, to become life-long learners.

Research indicates that through the use of technology students can overcome many of the hazards in education and can dramatically raise the knowledge levels, learn problem solving techniques and develop the skills required to manage massive amounts of information, analyze concepts from varying perspectives and develop "hard to quantify", higher-order critical thinking skills.

Brick Township Public School. (1994). Mission statement. Unpublished manuscript.

APPENDIX C

MISSION STATEMENT FROM EDUQUEST - AN IBM COMPANY

The EduQuest/The IES (IBM Educational Systems) Mission

The IES mission is to develop and implement technology that will help educators create an environment in which all children will be successful.

As James E. Dezell, Jr., former IBM Vice President and IES General Manager and former EduQuest President pointed out, the challenge is one of harnessing technology - and "redirecting its energy into the most dynamic and engaging educational systems ever developed" (Dezell, 1989, p. 1).

IBM is working to help educators by offering solutions that encompass classroom curricula, computers, classroom and administrative computer networks, and training for teachers.

IBM is dedicated to being a partner with the educational community - helping teachers and administrators in every region of the country teach their students to become productive members of society, ready and able to meet the increased competition in the world marketplace.

Dezell, J. (1989). IBM Educational System. Atlanta: IBM Educational System.

APPENDIX D

SAMPLES OF THE TECHNOLOGY ATTITUDE ASSESSMENT SURVEYS

Samples of the Technology Attitude Assessment Surveys Tool

The Technology Attitude Assessment Surveys were developed by the IBM Corporation with the University of the State of New York and the New York State Education Department's Division of Planning and Technology Services. They were revised by The Brick Township District of New Jersey.

The surveys were administered to the students and the teacher before the implementation and at the last week of the class observation visits. Examples of the surveys are included in this Appendix.

Students' Technology Attitude Assessment Survey Sheet

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Division of Planning and Technology Services
Albany, New York 12234

REVISED BY BRICK TOWNSHIP SCHOOL DISTRICT
Brick, New Jersey 08723

STUDENT QUESTIONNAIRE

TECHNOLOGY ATTITUDE ASSESSMENT SURVEY

This is a survey to learn about your feelings and attitudes about school and computers. Your answers will be looked at along with those of students from other schools. Please understand that at no time will either your name or you personally be associated with your answers. Please think about your feelings and answer honestly. There are no right or wrong answers. For each item, fill in the circle on the answer sheet that goes with the answer you choose. Make your mark heavy and dark. If you want to change an answer, you may erase the mark you made and make a new mark.

We appreciate your efforts and cooperation. Thank you.

---

1. What grade are you in? (A) Grade 2 (B) Grade 3 (C) Grade 4 (D) Grade 5

2. I am: (A) Female (B) Male

	Yes	No	Not Sure
3. I enjoy being at school.	(A)	(B)	(C)
4. School work is boring.	(E)	(F)	(G)
5. I like to learn new things.	(A)	(B)	(C)
6. I like to use the computer.	(E)	(F)	(G)
7. I tell my parents about the work I do on the computer.	(A)	(B)	(C)
8. I tell my friends about the work I do on the computer.	(E)	(F)	(G)
9. I feel confused when I use the computer.	(A)	(B)	(C)
10. Things I learn on the computer help me with my classwork.	(E)	(F)	(G)
11. My teacher helps me when I do not understand something on the computer.	(A)	(B)	(C)
12. My grades are better since I began using the computer to learn.	(E)	(F)	(G)
13. I am proud of the work I do on the computer.	(A)	(B)	(C)
14. Using computers is a waste of time.	(E)	(F)	(G)

	Yes	No	Not Sure
15. I like doing math word problems.	(A)	(B)	(C)
16. Schoolwork is easy for me.	(E)	(F)	(G)
17. Computer work was fun at first, but then it got to be boring.	(A)	(B)	(C)
18. I like reading stories.	(E)	(F)	(G)
19. I like playing word games.	(A)	(B)	(C)
20. The computer quickly tells me if I get the correct answer.	(E)	(F)	(G)
21. When I do not get the correct answer, the computer usually does not give me enough help.	(A)	(B)	(C)
22. Working at a computer makes me feel separated from the other kids.	(E)	(F)	(G)
23. When I do not understand something on the computer, I work until I figure it out.	(A)	(B)	(C)
24. When I do not understand something on the computer, I get help from other students.	(E)	(F)	(G)
25. It is easy for me to do math problems.	(A)	(B)	(C)
26. I did not like using the computer in school this year.	(E)	(F)	(G)
27. When I do not understand something, the computer helps me out.	(A)	(B)	(C)
28. Schoolwork is hard for me.	(E)	(F)	(G)
29. When I do not understand something on the computer, I like to ask for help.	(A)	(B)	(C)
30. I do not care whether or not I use computers at school.	(E)	(F)	(G)
31. I can type without looking at most of the letters.	(A)	(B)	(C)
32. I use a computer outside of school for fun.	(E)	(F)	(G)
33. When I type, I can find the letters but it takes some time.	(A)	(B)	(C)
34. I am just beginning to learn to type on the computer.	(E)	(F)	(G)
35. When I do not understand something on the computer, I can get help from my teacher or another adult.	(A)	(B)	(C)
36. I use a computer outside school for learning activities.	(E)	(F)	(G)
37. I like using computers in school.	(A)	(B)	(C)

38. Which is your easiest subject:
(A) Reading and Language Arts
(B) Science
(C) Math
(D) Social Studies

39. Which is your hardest subject:
(E) Reading and Language Arts
(F) Science
(G) Math
(H) Social Studies

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40. What do you like **MOST** about using computers at school?

41. What do you like **LEAST** about using computers at school?

42. What **WORDS** would you use to tell about this year in school?

THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY.

Teachers' Technology Attitude Assessment Survey Sheet

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Division of Planning and Technology Services
Albany, New York 12234

95

REVISED BY BRICK TOWNSHIP SCHOOL DISTRICT
Brick, New Jersey 08723

TEACHER QUESTIONNAIRE

IBM/ SED JOINT STUDY

TECHNOLOGY ATTITUDE ASSESSMENT SURVEY

This survey, part of the IBM/SED Joint Study, is intended to assess your feelings and attitudes about technology and its use in your school this year. For purposes of this survey, technology means such instructional devices as computers, telecommunications and the use of hypermedia. The results of the survey will be looked at along with results from seven other participating schools in Brick Township School District. Be assured that at no time will either your name or you personnally be associated with your answers.

We appreciate your efforts and cooperation. Thank you.

---

1. Education Level: (A) Bachelor's (B) Bachelor's + 30 (C) Master's (D) Masters + 30 (E) Doctorate
2. Total Years Teaching: (A) 0-5 (B) 6-10 (C) 11-15 (D) 16-20 (E) More Than 20
3. Grade Level (A) K-1 (B) 2-3 (C) 4 (D) 5 (E) 6

Over the past year how many time did you use technology?

	Never	Occasionally	Often	Very Often
4. As a teaching tool for instruction in Language Arts?	____	____	____	____
5. As a teaching tool for instruction in Mathematics?	____	____	____	____
6. With a word processor for personal work?	____	____	____	____
7. With word processing or other program for preparing tests or assignments?	____	____	____	____
8. With a word processor or other productivity software for other professional tasks?	____	____	____	____
9. In a program for entering or calculating grades?	____	____	____	____
10. In a graphics or drawing program?	____	____	____	____
11. In game or simulation software?	____	____	____	____
12. With a modem for telecommunications?	____	____	____	____

13. Do you have a computer at home? _____No _____Yes

14. What type of computer do you have? (A) IBM (B) IBM Compatible (C) Apple or McIntosh (D) Other (E) None

15. Do you have a modem? _____No _____Yes

16. How long have you been using your home Computer? _____Less Than 1 Year _____1-2 Years _____3-5 Years _____More Than 5 Years _____Not Applicable

In this past year, how often did each of the following happen at your school?

	Never	Occasionally	Often	Very Often
17. You talked about computers or technology related issues to other teachers or staff members	____	____	____	____
18. Your advice on computers was sought by other teachers	____	____	____	____
19. Technology was a topic of conversation among students in your presence	____	____	____	____
20. You were present when a principal or administrator talked about computers or technology related issues	____	____	____	____
21. Teachers worked together to plan for more effective use of technology	____	____	____	____

22. In the last school year, approximately how many hours did you spend in formal training related to the use of computers or other technologies? _____0-10 _____11-20 _____21-30 _____31-40 _____41-50

23. In the last school year, approximately how many hours did you spend learning to use a computer or other related technologies on your own time? _____0-10 _____11-20 _____21-30 _____31-40 _____41-50

24. What was your initial reaction to the period of formal training?

_____Overwhelming _____Difficult _____Challenging _____Acceptable _____Exciting

25. I would like to get better at using the computer to:

(A) Evaluate student achievement
(B) Encourage independent learning
(C) Encoursage independent problem solving strategies
(D) Individualize instruction
(E) Monitor basic skill building

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Please respond to the following:

	Strongly Agree	Agree	Disagree	Strongly Disagree
26. Since the addition of computers in my classroom, I have changed my teaching methods.	____	____	____	____
27. The use of computers allows me to individualize instruction.	____	____	____	____
28. Since computers were added to my classroom, I encourage more cooperative learning among students.	____	____	____	____
29. It is difficult for me to coordinate the use of the computer software with my curriculum.	____	____	____	____
30. Since the addition of computers in my classroom, I use my time more efficiently.	____	____	____	____
31. Discipline problems have decreased since I began using computers.	____	____	____	____
32. The use of computers in my classroom has become an important administrative tool.	____	____	____	____
33. Students do not show transference of skills from computer assignments to their classwork.	____	____	____	____
34. Having computers in my classroom allows me more time to devote to the individual needs of my students.	____	____	____	____
35. Since computers were added to my classroom, I have become better at identifying student weaknesses/ strengths.	____	____	____	____
36. The use of computers in my classroom has become an important part of my instructional program.	____	____	____	____
37. Computer use should be expanded in my classroom.	____	____	____	____
38. My students should spend more time using computers next year.	____	____	____	____

Do you feel that the use of computers and related technologies in your classroom helped/ improved the following?

	Strongly Agree	Agree	Disagree	Strongly Disagree
39. Student attention	____	____	____	____
40. Student concentration	____	____	____	____
41. Student requests for help when needed	____	____	____	____
42. Student problem solving	____	____	____	____
43. Student independent learning	____	____	____	____
44. Student achievement	____	____	____	____
45. Student attitude toward learning	____	____	____	____
46. Student attitude toward school	____	____	____	____
47. Student management time	____	____	____	____
48. Students learn more quickly	____	____	____	____
49. Students learn about things they otherwise would not be exposed to	____	____	____	____
50. Students get immediate feedback	____	____	____	____
51. Students are motiviated to practice new skills	____	____	____	____
52. Students practice and learn basic skills more	____	____	____	____
53. Students have better retention of facts	____	____	____	____
54. Students who learn faster are more challenged	____	____	____	____
55. Students who learn at a slower rate can progress at their own pace	____	____	____	____

56. ADDITIONAL COMMENTS: _____

_____

_____

_____

THANK YOU FOR COMPLETING THIS SURVEY.

APPENDIX E

HARDWARE ASSESSMENT DATA SHEETS

Hardware Inventory for the Second-grade Class

1994

Qty.	Description
5 -	computers which are EduQuest Model Forty with 4MB of memory, audio, no harddrive, 3.5 inch 1.44 diskette drive, and a token ring adapter that attaches to the server
1 -	printer which is Lexmark Personal Series II Printer

Hardware Inventory for the School Building

1994

(Grades: Kindergarten thru 4th Grades)

Qty. Description

School Hardware

5 - computers per kindergarten, first, second, third, and forth-grade classrooms as well as Basic Skills and Resource Rooms

(In the kindergarten, first, second and third-grade classrooms: IBM Model 25 with 640KB, no harddrive, token ring adapter card, digispeech and mouse attached or EduQuest Forty with 4MB of memory, 3.5 inch 1.44 diskette drive, audio, no harddrive, token ring adapter card and a mouse or in the fourth-grade classrooms: a combination of EduQuest Forty with 4MB of memory, harddrive, 3.5 inch 1.44 diskette drive, audio,and token ring adapter and Compaq with 1MB of memory, harddrive, token ring adapter card, and mouse.)

2 - computers in the Library

(EduQuest Forty with 4MB of memory, audio, no harddrive, token ring adapter card, 3.5 inch 1.44 diskette drive, and a mouse.)

1 - computer per office (principal, principal's secretary and supervisors' secretary)

(EduQuest Forty with 4MB of memory, audio, no harddrive, token ring adapter card, 3.5 inch 1.44 diskette drive, and a mouse.)

1 - printer per classroom, library, and secretary office

(Lexmark Personal Series II Printer)

1 - modem server for four (4) telephone lines

(EduQuest Forty with 8MB of memory, audio, 212 MB harddrive, token

ring adapter card, 3.5 inch 1.44 diskette drive, and a mouse.)

1 - CD-ROM server for eight (8) CD-ROM discs

(EduQuest Forty with 8MB of memory, audio, 212 MB harddrive, token ring adapter card, 3.5 inch 1.44 diskette drive, and mouse.)

3 - network servers with Netware 2.2 and ICLAS 1.41

(IBM Model 80 with 8MB of memory, 320MB harddrive, and token ring adapter card, 3.5 inch 1.44 diskette drive, and internal tape backup unit)

Each server had grade-level courseware. During the last two weeks of the implementation, the three servers were exchanged within the district for one larger server which is a IBM Model 95 with 16 MB of memory, 3GB harddrive, lanstreamer adapter card, and 2GM internal tape drive.

Equipment (Other technologies)

1 - Film strip

1 - VCR

1 - Slide projector

2 - Copiers

1 - LCD Projection panel

1 - Record player

1 - Cassette Recorders

1 - Piano in classroom

APPENDIX F

SOFTWARE ASSESSMENT DATA SHEETS

Current Software Inventory for the Second-grade Class

1994

Classroom LAN Courseware and LAN Software Installed:

Second-grade courseware -

IBM Writing to Write Form I

Children's Writing and Publishing

IBM Touch Typing for Beginners

IBM Reading for Meaning, Level I

IBM Reading for Information, Level I

IBM Exploring Math Concepts Level I

IBM Math Practice, Level I

IBM Math Concepts, Level I

IBM Math and More Level I

IBM Math and More Level II

IBM Measurement, Time, and Money, Level I

IBM Exploring Mathematics with Manipulatives, Level I

Teacher software -

IBM Linkway$_{tm}$[1]

Express Publisher$_{tm}$[2]

Excelsior$_{tm}$[3] grade2

Excelsior$_{tm}$[3] quiz2

Microsoft Works$_{tm}$[4]

LANSchool$_{tm}$[5]

Current Software Inventory for the School Building

(Grades: K - 4th Grades)

School LAN Software and LAN Courseware:

Three network servers with Netware 2.2 and ICLAS 1.41

Each of three servers had grade-level courseware. In addition to the second-grade courseware and software that could be used by teachers teaching second grade, there were two other servers that they could access the courseware for and with their students:

Kindergarten and First-grade classes server had

Student courseware -

IBM Writing to Read

IBM Primary Editor Plus

IBM Stories and More I

IBM Math Practice, Level I

IBM Math Concepts, Level I

IBM Measurement, Time, and Money, Level I

IBM Exploring Mathematics with Manipulatives, Level I

Teacher software -

IBM Linkway$_{tm}$[1]

Express Publisher$_{tm}$[2]

Excelsior$_{tm}$[3] grade2

Excelsior$_{tm}$[3] quiz2

Microsoft Works$_{tm}$[4]

LANSchool$_{tm}$[5]

Third-grade and fourth-grade classes server had

Student courseware -

IBM Writing to Write Form II

IBM Writing to Write Form III

Children's Writing and Publishing

IBM Touch Typing for Beginners

IBM Reading for Meaning, Level II

IBM Reading for Information, Level II

IBM Math Practice, Level II

IBM Math Concepts, Level II

IBM Measurement, Time, and Money, Level II

IBM Exploring Mathematics with Manipulatives, Level II

Teacher software -

IBM Linkway$_{tm}$[1]

Express Publisher$_{tm}$[2]

Excelsior$_{tm}$[3] grade2

Excelsior$_{tm}$[3] quiz2

Microsoft Works$_{tm}$[4]

LANSchool$_{tm}$[5]

During the last two weeks of the implementation, the three servers were exchanged for one of the larger servers within the district which now contains all the software and courseware for the school building.

Footnotes

[1]IBM Linkway is a trademark of International Business Machine

[2]Express Publisher is a trademark of Power Up.

[3]Excelsior, grade2 and quiz2, are registered trademarks or trademarks of Excelsior Software, Inc.

[4]Microsoft, Works, is the registered trademark or trademark of Microsoft Corporation.

[5]LANSchool is a trademark of LAN FAN Technologies, Inc.

APPENDIX G

MINI-TRAINING SESSIONS NOTES WITH CLASSROOM AND TEACHER VISITATIONS SHEETS

Objectives of the Mini-training Sessions and the Class-observation Visits

Mini-training sessions objectives were:

1) To discuss curriculum requirements in math and language arts.
2) To discuss how technologies maybe used to address learning styles in these subject areas.
3) To make recommendation about learning styles based on research findings.
4) To discuss learning styles research and its relationship to learning outcomes.
5) To discuss students' attitudes and performance during the week between class observation visits.

Class-observations visits objectives were:

1) To observe and record the class activities that address students' learning styles and modalities.
2) To observe and record materials and technologies used to address students' learning styles and modalities.
3) To observe students' attitude as they approach their assigned classwork.

Mini-training Session and Classroom Visits Sessions

Starting Week 2

During each weekly visitation, an hour was spent in observation and one-half to an hour was spent in discussions concerning the learning styles and incorporating activities to address those styles.

Questions asked during Week 2 before the Mini-training Sessions:

1) What tools are you using to assist your students in the learning process?

2) How successful are those tools?

3) Do you consider learning styles when you are teaching?

4) What learning style approach do you use?

Observation during Week 3 before the Mini-training Sessions:

1) Observe class activities and the involvement of the whole class during instruction.

2) Note the tools used.

3) Note the instructions given.

4) Note how the instructions are given.

5) Note whether any technologies are being used.

Questions to be Considered During the Class-Observation Visits

Focused Questions during the Eight Observation Sessions (Weeks 3 - 10):

(The questions were used as guidelines for the author during the author's class-observation visits.)

1) What concrete experiences are incorporated in the lesson?
2) Is there time to allow the concrete experience to be transforms to the reflective?
3) What abstract experiences are incorporated in the lesson?
4) Is there a transformation to the next level?
5) What learning outcomes are affected by the addressing of the learning styles in this lesson?
6) Are the students finding learning enjoyable?
7) Are the students getting immediate feedback?
8) Are there cooperative learning activities?
9) Are there independent learning activities?
10) What has been discovered since you have been keeping a log?

(A log sheet created by the author was shared with the teacher for her to complete daily.)

Focused Questions for the Teacher Consultant's Two Visits:

1) What activities seem to address most of the students' learning styles?
2) Have the lessons changed to address all of those learning styles?
3) What tools or technologies have been used and what learning style(s) did it (they) address and learning outcomes accomplished?(An information sheet created by the author for notes with a grid/table was shared with the consultant for her to complete during her visit with the teacher.)

Information Shared with the Teacher During the Mini-training Sessions:

Learning Styles

Kolb's Learning Styles' groups are: diverger, assimilator, converger, or accommodator. The diverger's preference is concrete experiences that are transformed into reflective observation. The assimilator's preference is abstract conceptualizations that are transformed into reflective observation. The converger 's preference is abstract conceptualization that are transformed into active experimentation. The accommodator's preference is concrete experiences that are transformed into active experimentation.

Class instruction should involve: concrete experiences and abstract conceptualizations that are transformed into reflective observation and active experimentation. Examples of concrete experiences and abstract conceptualization as they relate to the math and language arts class content for 10 weeks were shared with the teachers.

As learning styles are being addressed the following learning outcomes are being affected: intellectual skills, cognitive strategies, verbal information, attitude, and motor skills. The learning outcomes relationship to learning styles will be discussed.

Learning Modalities

Learning Modalities are visual, aural/audio, tactical, oral, and motor. In teaching a concept, the strategy is to incorporate seeing, listening, touching, speaking, and movement. These are easier incorporated in small group activities than large group activities. These modalities can be translated into activities that consist of reading, listening, writing, speaking, and using technology/computer.

With a learning center approach, each learning center can focus on a

different modality. At the same time learning styles can be observed and reinforced to produce the best learning outcomes.

Teaching and Learning with Computers (TLC) Approach and Learning Styles

The TLC concept that encourages independent study and cooperative learning, and emphasizes higher-order thinking skills accommodates different learning styles.

Teaching and Learning with Computers (TLC) consists of

- Learning Centers/Stations
- Software/Hardware
- Classroom Curriculum

Learning Centers (Small-Group Interaction)

- Activity Station: practice with the use of manipulative
- Background/ Writing Station: provide information; develop reference skills; learn writing organization
- Computer Station: learn from courseware; use word-processing tool for writing
- Library Station: provide opportunities for literature exploration

These stations allow for concrete and abstract experiences:

Concrete experiences - reading, writing, speaking, and using manipulative

Abstract experiences - decoding and encoding, thought to paper, things to order, and object to organize

Kolb's Learning Styles Information Summarized

Converger:

Modes are Abstract Conceptualization and Active Experimentation

Behavior - practical application of ideas and focus on the specific

Learn - by testing and by doing things in ways that make sense

Orientation - things people (People who prefer working with object or doing projects.)

Question Most

Frequently Asked - How does this work?

Approach to Situations - Common sense

Future Potential - Physical Science

Diverger:

Modes are Concrete Experimentation and Reflective Observation

Behavior - broad view of the concrete situation and focus on the general

Learn - by listening and sharing

Oriented - people people (People who enjoy and prefer doing tasks or activities with others.)

Question Most

Frequently Asked - Why or why not?

Approach to Situations - Imagery

Future Potential - Humanities and Liberal Arts

Assimilator:

Modes are Abstract Conceptualization and Reflective Observation

Behavior - integrating ideas and logical sequencing

Learn - by thinking through ideas

Oriented - things people

Question Most

Frequently Asked - What?

Approach to Situations - Analysis

Future Potential - Research and planning

Accommodator:

Modes are Concrete Experimentation and Active Experimentation

Behavior - doing things to completion, doing new things, risk taking, and adaptive

Learn - by trial and error

Oriented - people people

Question Most

Frequently Asked - What can this become?

Approach to Situations - Dynamic

Future Potential - Marketing and sales

Kolb's Modes	Personal Growth Characteristics
Concrete Experimentation - feeling	affective complexity
Reflective Observation - watching	perceptual complexity
Abstract Conceptualization - thinking	symbolic complexity
Active Experimentation - doing	behavioral complexity

A Summary of the Learning Styles with Learning Modalities, Activities, and Outcomes

Kolb's Learning Styles	TLC Learning Center Approach	Learning Modalities	Learning Activities	Tylerian's Learning Outcomes
Diverger (creative) Converger (practical) Assimilator (integrative) Accommodator (adaptive/intuitive)	Small group	Audio, visual, tactical, oral, motor	Reading, listening, writing, speaking, using technology	Intellectual skills, cognitive strategies, verbal information, attitude, motor skills
Diverger Accommodator	Cooperative	Audio, tactical, motor, visual, oral	Reading, writing, using technology, listening speaking	Intellectual, skills, cognitive strategies, verbal information, attitude, motor skills
Converger Assimilator	Active Learning	Audio, visual, tactical, oral, motor	Reading, listening, writing, speaking, using technology	Intellectual, skills, cognitive strategies, verbal information, attitude, motor skills
Diverger Converger Assimilator Accommodator	Technology	Audio, visual, tactical, oral, motor	Reading, listening writing, speaking, using technology	Intellectual, skills, cognitive strategies, verbal information, attitude, motor skills

Note. The author prepared this table after reviewing the literature about Kolb's learning styles, IBM/EduQuest's Teaching and Learning with Computers Approach, and Tylerian's learning outcomes.

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Teacher's Weekly Log Sheet
(Week 4 - 10)

Week: ____
Date: _____
Chart contains the percentage of time per day using the different teaching methods / approaches.

Teaching Methods	Monday	Tuesday	Wednesday	Thursday	Friday
WHOLE GROUP					
- Lecture					
- Student Presentation					
- Chalk board					
- TV or Movie					
- Paper-Pencil					
- Manipulative					
- Computers					
- Audio/Visual Material/Equipment					
SMALL GROUP					
- Textbooks					
- Paper-Pencil					
- Peer Interaction					
- Computers					
- Manipulative					
- Audio/Visual Equipment/Material					

Note. Record the percentage of time of whole vs. small group instructions. Record the percentage of time within whole and within small group instructions.

Author's and Teacher Consultant's Observation Sheet

Time Spent:

Date:

Math Topics Covered:

Writing Skills Covered:

General Observation of Students and Teacher:

Author's and Teacher Consultant's Observation Sheet
(continued)

Chart contains the percentage of time the teacher was observed using the different teaching methods/ approaches.

WHOLE GROUP	
- Lecture	
- Student Presentation	
- Chalkboard	
- TV or Movie	
- Paper-Pencil	
- Manipulative	
- Computers	
- Audio/Visual Materials or Equipment	
SMALL GROUP	
- Textbooks	
- Paper-Pencil	
- Peer Interaction	
- Computers	
- Manipulative	
- Audio-Visual Equipment	

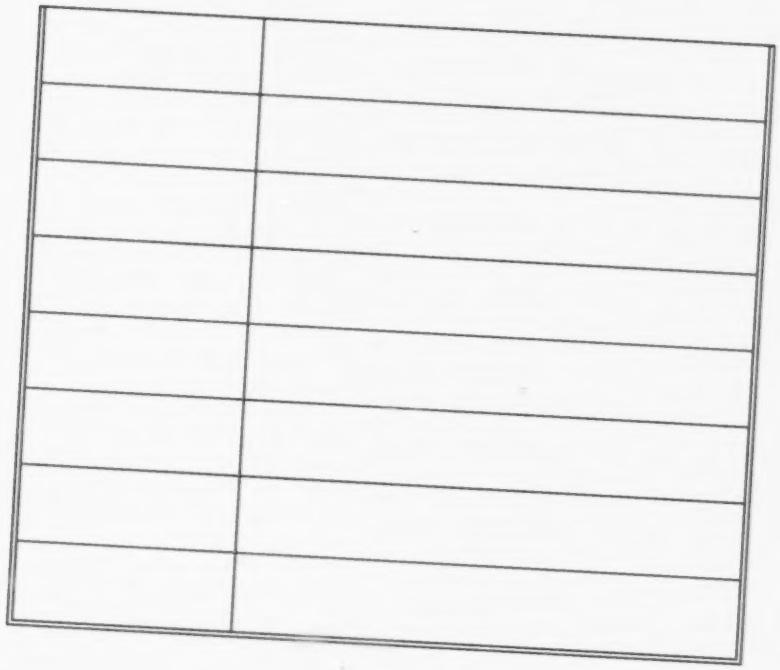
Note. Record the percentage of time of whole vs. small group instructions; record the percentage of time within whole and within small group instructions.

Observation Sheet for Second-grade Students' Learning Styles
(4 Weeks of Data)

Students' Names	Converger	Diverger	Assimilator	Accommodator

Observation Notes of the Second-grade Students

Students' Names	Observations



APPENDIX H

SAMPLES OF THE LETTERS SENT TO THE TEACHER AND THE PARENTS

Sample of the Letter to the Teacher

The letter to the teacher contained information from the author's observations, discussions with the teacher, and results of the learning style instrument.

Letter to the Teacher

Date

To: (Teacher's Name)

From: (Author)

Subject: Learning Styles/Teaching Styles

I have enjoyed working with you during my Practicum I for Ed.D. in Child and Youth Studies at Nova Southeastern University.

As we studied together your students' learning styles (their preferred ways that persons process information to use in their everyday lives), we have discussed your learning and teaching styles. We noticed how a learning style affect the way the students' grasp and transform information.

We have work as a whole class on some assignments and in small groups or in pairs on other assignment or students work one on one with me. Each type of interaction has proven important for each child. As you became more familiar with your students you began to spend even more time in small groups. This can be a management issue for many teachers, but each time I observed the different interaction every activity was executed well. The execution was evidence of fine planning to integrate technology, small group activities, large group activities, and other resources all day for almost every subject.

We send a letter to each of your students with twelve areas of learning styles. The twelve (12) different areas can be group into four main topics:

I. Immediate environment -
sound, temperature, light, and design

II, Emotional state -
motivation, responsibility, persistence, and structure

III. Sociological needs -
self, pairs, peers, team, adults, and/or varied

IV. Physical needs -
perceptual, strength and/or weaknesses, time of day, intake of food and fluids, and mobility.

The following was noted during our discussion and your responses to learning style instrument. You are a visual that prefer during difficult tasks in the afternoon in an informal, quiet, dimly lighted place. While working alone in one place you do not eat but concentrate on the task that needs to be completed. Any task given you is completed and completed with creativity. You enjoy new

learning experiences that are interesting or that you make interesting.

Of the four learning styles in Kolb's theory, you are an accommodator. As an accommodator your preference is concrete experiences and you transform them by using active experimentation. Accommodators are people persons. As an accommodative teacher, you expect your students to relate to the real world. You learn by trial and error (self-discovery) and by asking the question, "What can this become?"

Although accommodator is your dominant style, during my class observations I noticed that based on the needs of your students you showed evident of other styles: the assimilative teacher who has a teacher-centered class; the divergent teacher who avoids conventional patterns or schedules; the convergent teacher who operates an orderly classroom. In fact, your students were either assimilator, diverger, or accommodators. (one-third in each group)

Hopefully, these notes will be helpful to you as you plan your 1994-95 school year.

(Teacher's name), the following are results from our discussion:

Immediate Environment

SOUND - You prefer studying in a quiet area.

LIGHT - You prefer low lights.

TEMPERATURE - You prefer to work in a warm place.

DESIGN - You prefer a informal setting for studying, e.g., lying on the floor, rug, cushion or pillow or sitting in a comfortable easy chair.

Sociological Needs

SOCIOLOGICAL - You prefer to work alone.

Emotional State

STRUCTURE - You prefer little structure. In fact, you need choices and options and like to have her activities planned with your involvement.

RESPONSIBLE and PERSISTENT
- As a responsible adult you only need feedback occasionally. She can pace and check herself.

MOTIVATION
- You are self-motivated. You can voluntarily create and implement your own projects

Physical Needs

PERCEPTION - You are a visual learner.

INTAKE - You prefer not to eat snacks during the day when learning new and difficult tasks.

MOBILITY - You work best when you are stationary.

TIME - You are an afternoon person.

Samples of the Letters Sent to the Parents

Twenty-two letters were written for the parents of the twenty-two students. Each of the letters contained information from the observations of the author as well as conversations with the child and the results of the Perrin's Learning Style Instrument. Each letter was mailed with three enclosures: a newsletter and two photographs.

Four (4) Sample Letters sent to Parents

(Date)

To the Parents of (the girl student's name)

I have enjoyed teaching (girl's name) this year in second grade.

This was the second year for our elementary school to use many activities with computers as well as the additional resources to teach our students "reading, 'riting, and 'rithmetic". The students did well in language arts as you will see when you read our newsletter which demonstrates a wide range of writing abilities stretching from September 1993 through June 1994. They also did well in mathematics as you have seen on the various assignments returned home. In additional to the expansion in resources, I had the opportunity to work with a doctorate student. During our work together, we have studied the learning styles of the students. Learning styles are the preferred ways that people process information. Our first goal was to recognize your child's learning style so that we may better address the way she learns. Our second goal was to share with you ideas that you may use this summer and, if possible, throughout your child's educational experiences.

During the year, the class has worked as a whole class for some assignments, worked in small groups or in pairs on some assignments, and worked with me individually while doing other assignments. Each type of interaction has proven important for each child. Enclosed you will find a photo of the whole class and a photo of your child's buddies or pals. She chose these pals when she found an opportunity to choose her own team for an assignment. We hope that these photos will bring fond memories to your child now and when she is older.

In concert with the efforts of the school district, we are looking at each student as an individual and acknowledging their similarities and differences in the way that they learn. Each of the children learn best in different ways. When we know a child's learning style through observations and surveys, we can better build upon the child's strengths and know the child's potential.

On the next few pages, we will discuss your child's learning preferences in twelve (12) different areas. These areas are grouped into four main topics:

I. Immediate environment -
   sound, temperature, light, and design

II. Emotional state -
   motivation, responsibility, persistence, and structure

III. Sociological needs -
   self, pairs, peers, team, adults, and/or varied

IV. Physical needs -
perceptual, strength and/or weaknesses, time of day, intake of food and fluids, and mobility.

Through your own discussions with your child, you will gain more insight into each of these areas.

Your child was asked what word or words best described her. She wrote 'SUPER'. That was interesting and what a great word! Is it the same word that you would use to describe her?

During the class experience, it was noted that your child is able to integrate ideas in the environment when she can work alone with some supervision in a relatively quiet room that is cool. She works best when she is assigned one task at a time and is given praise at the completion of the task. She completes each task that she is given before starting the next task. Although she completes her work in school, she has indicated that she prefers working in the evening. This means that she is more alert in the evening and new learning experiences will be grasped faster.

She learns by thinking through ideas and asking the questions that normally start with, " What?"

Hopefully, this will help you understand your child better and help her to find her own niche in learning as well as make a valuable contribution to her life.

(Teacher's Name)
Second-grade Teacher

(Author's Name)
Ed.D. Candidate in
Child and Youth Studies

Attachment

(name)'s responses to learning preferences in twelve (12) different areas are grouped into four main topics. By having your child answer some questions in different learning styles, the following results were noted:

Immediate Environment

SOUND - When your child is studying, talking or music does not bother her. In fact, she prefers the sounds.

LIGHT - Your child prefers low lights. It is best for her when the lights are dimmed.

TEMPERATURE
- Your child prefers to work in a cool place.

DESIGN - Your child prefers an informal setting for studying, e.g., lying on the floor, rug, cushion or pillow or sitting in a comfortable easy chair.

Emotional State

MOTIVATION - Your child needs motivation by being given brief assignments based on her ability, level, and interest and using a variety of interesting learning resources with planned assignments that will provide success.

RESPONSIBLE and PERSISTENT
- Your child felt that she was responsible. She only needs feedback occasionally. She can pace and check herself. It is important that directions are specific.

STRUCTURE - Your child prefers a little structure, yet she needs choices and options. She likes to be given more than one assignment at a time where she can choose the first, next, etc. and the time needed for each assignment. She likes to have her activities planned with her involvement. Then the assignments that are long are given in short segments.

Sociological Needs

SOCIOLOGICAL - While doing assignments, she prefers to work alone. Yet, she prefers to work with an adult for interaction and directions.

Physical Needs

PERCEPTION - Your child learns best when she uses her sense of touch. She is a tactual learner. She learns well with puzzles, computer, writing, chalkboard and other manipulative. Also she learns best with a lot of large manipulative such as large floor puzzles and games, experiences in cooking and building, and from concrete experiences such as walks in the community, trips to special sights, puppet shows, plays, etc.

INTAKE - Your child does not require snacks while she is studying or is working on a task.

TIME - Your child stated that she feels more alert in the evening which means learning new things is done best in the evening. In fact, homework is completed best when done in the evening.

MOBILITY - Your child works best when she stays in one place. Therefore, she needs to gather all her resources before she starts to study.

This summary of these areas is meant to help you to reinforce or accentuate your child's strengths.

(Date)

To the Parents of (the girl student's name)

I have enjoyed teaching (girl's name) this year in second grade.

This was the second year for our elementary school to use many activities with computers as well as the additional resources to teach our students "reading, 'riting, and 'rithmetic". The students did well in language arts as you will see when you read our newsletter. They also did well in mathematics as you have seen with the various assignments returned home. In additional to the expansion in resources, I had the opportunity to work with a doctorate student. During our work together, we have studied the learning styles of the students. Learning styles are the preferred ways that people process information. Our first goal was to recognize your child's learning style so that we may better address the way she learns. Our second goal was to share with you ideas that you may use this summer and, if possible, throughout your child's educational experiences.

During the year, the class has worked as a whole class for some assignments, worked in small groups or in pairs on some assignments, and worked with me individually while doing other assignments. Each type of interaction has proven important for each child. Enclosed you will find a photo of the whole class and a photo of your child's buddies or pals. She chose these pals when she found an opportunity to choose her own team for an assignment. We hope that these photos will bring fond memories to your child now and when she is older.

In concert with the efforts of the school district, we are looking at each student as an individual and acknowledging their similarities and differences in the way that they learn. Each of the children learn best in different ways. When we know a child's learning style through observations and surveys, we can better build upon the child's strengths and know the child's potential.

On the next few pages, we will discuss your child's learning preferences in twelve (12) different areas. These areas are grouped into four main topics:

I. Immediate environment -
sound, temperature, light, and design

II. Emotional state -
motivation, responsibility, persistence, and structure

III. Sociological needs -
self, pairs, peers, team, adults, and/or varied

IV. Physical needs -
perceptual, strength and/or weaknesses, time of day, intake of food and fluids, and mobility.

Through your own discussions with your child, you will gain more insight into each of these areas.

Your child was asked what word or words best described her. She wrote 'Very Smart'. That was interesting and what great words! Are those the same words that you would use to describe her?

During the class experience, it was noted that your child is observant and works well with her peers. She prefers to work in a quiet, cool area in an informal setting with bright lighting in the afternoon. She prefers to move about, to have frequent breaks, and not to eat while she is doing her work. She accomplishes more when she works alone and works in the afternoon. Before the assignment, she prefers that the adult gives written directions as well as oral directions. She wants to know all the options and be able to select the order of completing each option. The assignment holds his interest the longest if it involves different resources, for example, audio tapes, videotapes, paper and pencil, puzzles, etc. During the assignment, she needs continuous motivation in the form of praise.

She learns by trial and error (self-discovery) and by asking the question, What can this become?"

Hopefully, this will help you understand your child better and help her to find her own niche in
learning as well as make a valuable contribution to her life.

(Teacher's Name)
Second-grade Teacher

(Author)
Ed.D. Candidate in
Child and Youth Studies

Attachment

(Girl's name)'s responses to learning preferences in twelve (12) different areas are grouped into four main topics. By having your child answer some questions in different learning styles, the following results were noted:

Immediate Environment

SOUND - Your child prefers studying in a quiet area.

LIGHT - Your child prefers bright lights. It is best for her when there is extra bright lighting or when she works near the window or with bright highly focused lamps.

TEMPERATURE
- Your child prefers to work in a cool place.

DESIGN - Your child prefers an informal setting for studying, e.g., lying on the floor, rug, cushion or pillow or sitting in a comfortable easy chair.

Emotional State

MOTIVATION - Your child is being motivated by the teacher and/or an adult. She like praise from the teacher. Praises from the parents are important. Your child is also self-motivated. She can pace herself and check her own work. She initiates her own projects but she still need the praise and encouragement.

RESPONSIBLE and PERSISTENT
- Your child felt that she was responsible. She only needs feedback occasionally. She can pace and check herself. It is important that instruction or directions are specific.

STRUCTURE - Your child prefers little structure. She needs choices and options. She likes to be given more than one assignment at a time where she can choose the first, next, etc. and the time needed for each assignment. She likes to have her activities planned with her involvement.

Sociological Needs

SOCIOLOGICAL
- Your child prefers to work with adult for interaction and directions. Your child also likes to work with another child or a small group of children. She likes the interaction with others and gain much from the experiences.

Physical Needs

PERCEPTION - Your child mostly learns best when her sense of sight is used. She is a visual learner which needs such things as films, books with pictures, and movies. Your child learns well when she uses her sense of touch. She is a tactual learner. She learns well with puzzles, computer, writing, chalkboard and other manipulative as well as a lot of large manipulative such as large floor puzzles and games, experiences in cooking and building, and from concrete experiences such as walks in the community, trips to special sights, puppet shows, plays, etc.

MOBILITY - Your child works best when she has frequent breaks to allow her to move about.

INTAKE - Your child does not require snacks while she is studying or is working on a task.

TIME - Your child stated that she feels more alert in the afternoon which means learning new things is done best in the afternoon. In fact, homework is completed best when done in the afternoon.

This summary of these areas is meant to help you to reinforce or accentuate your child's strengths.

(Date)

To the Parents of (the boy student's name)

I have enjoyed teaching (boy's name) this year in second grade.

This was the second year for our elementary school to use many activities with computers as well as the additional resources to teach our students "reading, 'riting, and 'rithmetic". The students did well in language arts as you will see when you read our newsletter. They also did well in mathematics as you have seen with the various assignments returned home. In additional to the expansion in resources, I had the opportunity to work with a doctorate student. During our work together, we have studied the learning styles of the students. Learning styles are the preferred ways that people process information. Our first goal was to recognize your child's learning style so that we may better address the way he learns. Our second goal was to share with you ideas that you may use this summer and, if possible, throughout your child's educational experiences.

During the year, the class has worked as a whole class for some assignments, worked in small groups or in pairs on some assignments, and worked with me individually while doing other assignments. Each type of interaction has proven important for each child. Enclosed you will find a photo of the whole class and a photo of your child's buddies or pals. He chose these pals when he found an opportunity to choose his own team for an assignment. We hope that these photos will bring fond memories to your child now and when he is older.

In concert with the efforts of the school district, we are looking at each student as an individual and acknowledging their similarities and differences in the way that they learn. Each of the children learn best in different ways. When we know a child's learning style through observations and surveys, we can better build upon the child's strengths and know the child's potential.

On the next few pages, we will discuss your child's learning preferences in twelve (12) different areas. These areas are grouped into four main topics:

I. Immediate environment -
sound, temperature, light, and design

II. Emotional state -
motivation, responsibility, persistence, and structure

III. Sociological needs -
self, pairs, peers, team, adults, and/or varied

IV. Physical needs -
perceptual, strength and/or weaknesses, time of day, intake of food and fluids, and mobility.

Through your own discussions with your child, you will gain more insight into each of these areas.

Your child was asked what word or words best described him. He wrote 'huge!'. That was interesting and what a great word! Is it the same word that you would use to describe him?

During the class experience, it was noted that your child likes extra attention, learns well with manipulatives and when he interacts with people. When he is interested in a topic, he is a good listener. Brad likes to work in a place that has a lot of light. This place also needs to be warm and have sounds such as music or talking. His best setting is informal where he can sit on a comfortable chair or on the floor. He works best in the afternoon or evening when he is alone in one place without snacks. He does not need to eat until he finishes his task. He can work well with a team or an adult. It is important that directions are simple with visual aid and when the adult is available to explain the directions further and give praise.

He learns by listening and sharing and by asking the question, "Why?" or "Why not?"

Hopefully, this will help you understand your child better and help him to find his own niche in
learning as well as make a valuable contribution to his life.

(Teacher's name)
Second-grade Teacher

(Author)
Ed.D. Candidate in
Child and Youth Studies

Attachment

(Boy's name)'s responses to learning preferences in twelve (12) different areas are grouped into four main topics. By having your child answer some questions in different learning styles, the following results were noted:

Immediate Environment

SOUND - When your child studies talking or music does not bother him. In fact, he prefers the sounds.

LIGHT - Your child prefers bright lights. It is best for him when there is extra bright lighting or when he works near the window or with bright highly focused lamps

TEMPERATURE - Your child prefers to work in a warm place.

DESIGN - Your child prefers an informal setting for studying, e.g., lying on the floor, rug, cushion or pillow or sitting in a comfortable easy chair.

Sociological Needs

SOCIOLOGICAL - Your child prefers to work alone and with adult for interaction and directions as well as with another child or a small group of children. He likes the interaction with others and gains much from the experiences.

Emotional State

STRUCTURE - Your child prefers clear simple objective. He needs directions that are visual (in words and in pictures) and auditorial (repeated if necessary). He does not want many choices. He prefers if you assign one task at a time and place a time limit on each one for he and give immediate feedback as the work is done. Also it is important to review the work during the study time and/or immediately after the completion of the assignment. Sometimes, your child prefers little structure. He needs choices and options. He likes to be given more than one assignment at a time where he can choose the first, next, etc. and the time needed for each assignment. He likes to have his activities planned with his involvement.

RESPONSIBLE and PERSISTENT
- Sometimes your child felt that he was responsible and other times he was not responsible. In other words, he performs best when he has short assignments, work is checked often and he understands the importance of what is being asked. He only needs feedback occasionally. He can pace and check himself. It is important that instruction or directions are specific.

MOTIVATION - Your child prefers being motivated by the teacher or adult. He like praise from the teacher. Praises from the parents are important. He can initiate his own projects, but he still need the praise and encouragement.

Physical Needs

PERCEPTION -Your child learns best with a lot of large manipulative such as large floor puzzles and games, experiences in cooking and building, and from concrete experiences such as walks in the community, trips to special sights, puppet shows, plays, etc. He also learns best when his sense of sight is used. He is a visual learner in which such things as films, books with pictures, and movies are good tools for him.

INTAKE - Your child does not require snacks while he is studying.

MOBILITY - Your child works best when he stays in one place. Therefore, he needs to gather all his resources before he starts to study or during new tasks.

TIME Sometimes, your child seems to be a afternoon child which means learning new things is done best in the afternoon. In fact, homework is completed best when done in the afternoon.

The summary of these areas is meant to help you to reinforce or accentuate your child's strengths.

(Date)

To the Parents of (the boy student's name)

I have enjoyed teaching (boy's name) this year in the second grade.

This was the second year for our elementary school to use many activities with computers as well as the resources to teach our students "reading, 'riting, and 'rithmetic". The students did well in language arts as you will see when you read our newsletter which demonstrates a wide range of writing abilities stretching from September 1993 through June 1994. They also did well in mathematics as you have seem with the various assignments returned home. In additional to the expansion in resources, I had the opportunity to work with a doctorate student. During our work together, we have studied the learning styles of the students. Learning styles are the preferred ways that people process information. Our first goal was to recognize your child's learning style so that we may better address the way he learns. Our second goal was to share with you ideas that you may use this summer and, if possible, throughout your child's educational experiences.

During the year, the class has worked as a whole class for some assignments, in small groups or in pairs on other assignments, and worked with me while doing other assignments. Each type of interaction has proven important for each child. Enclosed you will find a photo of the whole class and a photo of your child's buddies or pals that when he found an opportunity to choose his own group he chose as part of his team. We hope that this will bring fond memories to your child.

In concert with the efforts of the school district, we are looking at each student as an individual and acknowledging their similarities and differences in the way that they learn. Each of the children learn best different ways. When we know a child's learning style through observation and surveys, we can better build upon the child's strengths and know the child's potential.

On the next few pages, we discuss what seems to be your child's preferences in twelve (12) different areas. These areas are grouped into four main topics:

I. Immediate environment -
sound, temperature, light, and design

II. Emotional state -
motivation, responsibility, persistence, and structure

III. Sociological needs -
self, pairs, peers, team, adults, and/or varied

IV. Physical needs -
perceptual, strength and/or weaknesses, time of day, intake of food and fluids, and mobility.

Through your discussions with your child, you may gain more insight into each of these areas.

Your child was asked what word or words best described him. He wrote 'Very Good'. That was interesting and what great words! Are they the same words that you would use to describe him?

During the class experience, it was noted that your child is a loner that is creative and attentive. He prefers to work in a quiet, cool area in an informal setting with dim lighting in the afternoon. He prefers to stay in one place and eats while he is doing his work. He accomplishes more when he works alone and works in the evening. He likes and learns from working with his peers. Before the assignment, he prefers that the adult gives written directions as well as oral directions with visual aides (written instructions, pictures, etc.). He wants to know all the options and be able to select the order of completing each option. The assignment holds his interest the longest if it involves different resources, for example, audio tapes, videotapes, paper and pencil, puzzles, etc. During the assignment, he needs continuous motivation in the form of praise.

He learns by listening and sharing and by asking the question, "Why?" or "Why not?"

Hopefully, this will help you understand your child better and help him to find his own niche in learning and make a valuable contribution to his life.

(Teacher's name)
Second-grade Teacher

(Author)
Ed.D. Candidate in
Child and Youth Studies

Attachment

(Boy's name)'s responses to learning preferences in twelve (12) different areas are grouped into four main topics. By having your child answer some questions in different learning styles, the following results were noted:

Immediate Environment

SOUND - Mostly this was not acceptable by your child when studying. Your child prefers studying in a quiet area.

LIGHT - Your child prefers low lights. It is best for her when the lights are dimmed.

TEMPERATURE
- Your child prefers to work in a cool place.

DESIGN - Your child prefers an informal setting for studying, e.g., sitting in a comfortable easy chair or lying on the floor, rug, cushion, or pillow.

Sociological Needs

SOCIOLOGICAL
- Mostly your child prefers to work with another child or a small group of children. He likes the interaction with others and gains much from the experiences.

Physical Needs

STRUCTURE - Mostly your child prefers little structure. He needs choices and options. He likes to be given more than one assignment at a time where he can choose the first, next, etc. and the time needed for each assignment. He like to have her activities planned with his involvement. Your child prefers clear simple objective. He needs directions that are visual (in words and in pictures) and auditorial (repeated, if necessary). He does not want many choices. He prefers if you assign one task at a time and place a time limit on each one for him and give immediate feedback as the work is done. Also it is important to review the work during the study time and/or immediately after the completion of the assignment.

RESPONSIBLE and PERSISTENT
- Your child felt that he was responsible. He only needs feedback occasionally. He can pace and check himself. It is important that instruction or directions are specific.

Emotional State

MOTIVATION - Mostly your child is self-motivated. He can pace himself and check his own work. He initiate his own projects, but he still needs the praise and encouragement. He also prefers being motivated by the teacher and adults. He like praise from the teacher. Praises from the parents are important. .

PERCEPTION - Mostly your child learns best with a lot of large manipulatives such as large floor puzzles and games, experiences in cooking and building, and from concrete experiences such as walks in the community, trips to special sights, puppet shows, plays, etc.

INTAKE - Your child prefers to eat snacks during the day when learning new and difficult tasks.

MOBILITY - Depending on the assignments, your child may or may not be mobile while working. For complicated assignment he works best when he stays in one place. Therefore, he needs to gather all his resources before he starts to study or during a new tasks. For easier assignments, your child works best when he has frequent breaks to allow him to move about.

TIME - Mostly your child stated that he feels more alert in the evening which means learning new things is done best in the evening. In fact, homework is completed best when done in the evening.

The summary of these areas is meant to help you to reinforce or accentuate your child's strengths.

APPENDIX I

SAMPLE OF THE NEWSLETTER TO THE PARENTS

A Sample of the Newsletter to the Parents

The newsletter was designed by the author and implemented by the teacher. The writing samples of the students represented each of the IBM Writing to Write[tm1] Units to show the parents the progress of the class in language arts.

[1]Writing to Write is a trademark name of the International Business Machines, Incorporated.

NUMBER ONE

1993-1994 Second Grade Class of Mrs. MacDougall

This newsletter consists of writings collected from the 2nd Grade students during units studied in Writing to Write.

Writing to Write is a yearlong, computer-centered writing program. Its goal is to teach students how to communicate their thoughts to readers in a clear and coherent manner.

Unit 1, Naming (nouns), has the student focus on the concept that all writing must be about a topic. By first naming what they see and using these naming words, students learn how to focus on a topic. This unit produces a paper of observation.

Name:

Title: The Classroom

First Sentence:
I can see many things in the classroom.

Sentences with Naming Words:
I see many things in the classroom. I see the flag and the map and the globe and also the blackboard.

Ending Sentence:
The classroom has many things to see.

Name:

Title: The City

First Sentence:
I am going to tell you about the city.

Sentences with Naming Words:
In the city there are people walking and bikeing down the sidewalk. In front of the streets in the city there are peoples houses. In front of the subway there are cars driveing down the streets.

Ending Sentence:
I am done telling you about the city.

Unit 2, Naming Again, continues to develop the theme of topic, helping students understand that the writer can further define a subject or topic by thinking of synonyms, pronouns, or proper nouns that "rename" the origi topic. The writing goal in this unit is paper of definition that is based on roles.

Name:

Title: Stephanie

First Sentence:
I am going to tell you about my sister Stephanie.

Sentences with Naming-Again Words:
I like Stephanie because she is a girl. She is also a playmate and a funny gi Stephanie is a great swimmer. Stephanie is a nice girl.

Ending Sentence:
Stephanie is a very nice girl.

Name:

Title: The Very Great Brother

First Sentence:
I am going to tell you about my baby brother and what my baby brother did

Sentences with Naming-Again Words:
My baby brother is good ant everythin He is a good cryer, and a good swimmer. He is a hitter, a biter, and a spitter. Andrew is a runner, a walker and a sweetie pie.

Ending Sentence:
My baby brother is a good brother.

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unit 3, Describing and Attributing (adjectives), shifts focus from topic alone to helping students say something more about the topic. They learn the strategy for describing and write a paper to help their readers visualize what the writer is observing.

Name:

Title: The Pink House

First Sentence:
I am writing to tell what a nice house is like.

Sentences with Describing Words:
A house has a red roof, bathroom, a big living room and a bedroom. The house is nice. A house is a place to live in.

Ending Sentence:
I like my home.

Name:

Title: Best Friend

First Sentence:
I am writing about a nice dog.

Sentences With Describing Words:
My dog has cuddly and warm ears. The legs are brown and cute. My dog as a brown tail. He has a cute body.

Ending Sentence:
Max is my best friend.

Name:

Title: The Butterfly

First Sentence:
A butterfly has many colorful parts.

Sentences With Describing Words:
The butterfly is colorful. The eyes are pretty and colorful. The head is purple and small. A butterfly has pretty and colorful wings.

Ending Sentence:
A butterfly can be beautiful.

Unit 4, Predicating: Action Words (verbs), asks students to write about what a topic does. Their final paper expresses something about what their subject is capable of doing; it is a paper of predication.

Name:

Title: A Pretty Girl

First Sentence:
A girl can do many things.

Sentences With Action Words:
A girl can dance and sing. A girl can play. A girl can smell flowers, hear birds and see grass.

Ending Sentence:
A girl can be fun and pretty.

Name:

Title: A Teacher Can Do Many Things

First Sentence:
I am writing to tell what a teacher can do.

Sentences With Action Words
A teacher can draw. A teacher can play. A teacher can smile.

Ending Sentence:
A teacher is fun.

Name:

Title: My Sister Kelly

First Sentence:
I am writing about Kelly.

Sentences With Action Words:
My sister can run. She can walk. She can sleep. She can skip. She can smile.

Ending Sentence:
I like my sister she is nice.

Unit 5, Sentence Patterns: Noun-Verb, introduces students to the simple sentence pattern Noun-Verb. Students learn to build noun-verb sentences as a way to capture the essence of a situation. Students apply the technique by writing a poem about an event.

Name:

Many things happen on a windy day.

The dog jumps	Breeses blow
Smoke spreads	Worm wiggles
Kites stick	Puppy wags
Petals fall	Book flaps
Butterfly flies	Umbrella turns

Some windy day huh?!

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Unit 6, Sentence Expanding, develops students' ability to compose detailed sentences. Students learn techniques for adding detail through sentence expanding to provide their readers with more information about their topic.

Name:

Title: A Nice Kindergarten

First Sentence:
I am writing about what it is like in kindergarten.

Expanded Sentences:
The good teacher watches carefully.
The big kids play fast. The lucky person eats fast in the afternoon in the class.

Ending Sentence:
That was all about what happened in kindergarten.

Name:

Title: BUGS ARE NEAT!

I am writing to tell what happens when I go searching for bugs.
The silly beetle slimes cutely in the dirt. The fuzzy spider crewls slowly in the daytime. The funny ladybug walks quietly in the grass.
Bugs are fun to watch!

Unit 7, Organizing, provides a transition to a more sophisticated form of writing by showing the students how to organize complex passages. Students organize groups into an orderly sequence. The result is a complete report made up of a series of paragraphs.

Name:

Title: Jewelry Store

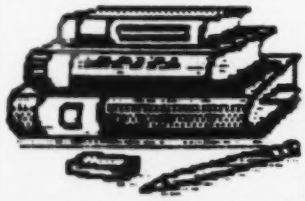
Wedding rings, engagement rings, diamond rings, sports rings, and pinke rings are all rings that are in a jewelry store.

Things like bracelets, ankle bracelets and earrings are jewelry that is round. In the jewelry store there are pretty stone like rubies, diamonds and crystals.

Those are all the types of jewelry in my jewelry store.

Name:

The Interview and the Library



I am going to tell yo about sports books and "how to" books and books bout singers in the library. I hope you enjoy your reading! Right now I will talk about sports books. I like sports. Sometimes when I go to the library they have books on soccer, hockey, baseball, tennis and croquet. I like them all! It is hard to say which one like best. I think tennis, but I am not sure. Well, while I am deciding, you could read this...
Hi! Ariell is thinking right now. I am the librarian. I am going to tell you about how-to books. At my library we have how-to books. Here are some of them... hockey, whistle, read and jump rope. Well I have to get back to work so here is a customer to do the end o our interview at the library.
Hi! I'm Whitney Houston. I am looking the singer section of the library. It i my favorite section. There is, Bonnie Pryar, Meat Loaf, Tin Machine, Tina Turner, and Sisters with Voices. (swv! Oh! and me, Whitney Houston.! You can go to the library and get some of the books. I hope you liked the interview. Bye!! (P.S. I would like to thank the people who made this book possible. The librarian and Whitney Houston.)

Name:

The Greatest Aquarium

You are going to like it at the aquarium.
We are going to see the divers, fish and the things that have shell. The divers are going to jump in the water. The guests are going to watch curiously. The feeders are feeding every fish.
The fish are nice. The flounders eat sea weed. The guppies are being good The Tiger sharks are mad.
The crabs pinch you. The lobsters do the same. The clams are nice.
Would you like to visit the aquarium soon? It is fun!

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The Exciting Grocery Store

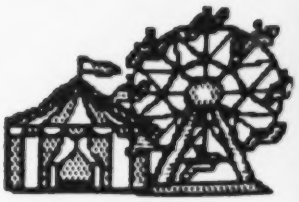
The grocery store has lots of groups like vegetables and fruits, canned food, and boxed food. All of these are in aisles.
Vegetables are very good for you because they keep you strong and healthy. They even have little vegetables in cans for babies. That makes them healthy too! There are many fruits like pears, apples, oranges, and plums. All of them are good for you and your family. They are really good for snacks.
Canned foods are in cans, of course. Canned foods can be lots of things like soup, macaroni, tomato soup, chicken gravy, and last but not least chunky chicken.
Boxed foods are in boxes, of course. They are lots of things like cereal, oat meal and cinnamon crackers.
The grocery store is closing now and I'm done writing about the grocery store. It was fun. Now we have to say goodbye.

Unit 8, Narration, asks students to write a story about something important that happened to them. This composition requires students to think about who, what, where, when and why. The narrative must include information about how the student was feeling during the event.

Name:

Surgery on My Eye

I am going to tell you about when I had surgery on my eye. My mom was at the hospital when I was two.
First my dad and mom drove me to the hospital. I got out of the car. My mom gave my name. Then I waited in the waiting room. After a few minutes the doctor came and took me in the room.
During the surgery the doctor took out a piece of bone. After that I was very thirsty so the doctor gave me some apple juice.
So I called the doctor Dr. Apple Juice. This thing was cool because it was interesting. One of the things that I learned in this story is that my parents cared about me.
When I think back at this event, I feel HAPPY that it is over. In this story I call myself, Mrs. Stitch.



Name:

Six Flags

I'm writing about when I went to Six Flags. Chris was there with my mom dad and me. It was in 1993.
I went on the coolest rides. I got wet. I saw Bugs Bunny. I saw all the cartoon stars. I went on a helicopter. And I saw a beach.
This event WAS important because my dad paid for it. One thing I learned from this is you have a lot of fun there. When I think back at this event, I feel happy and incredible. In this story I would call myself a nice kid.

Name:

MY FISHING TRIP

Last summer I went fishing in the ocean with my dad and uncle.
It was the best. I caught a blue fish, tuna fish, shark. But then I almost fell in. But my uncle, dad saved me by pulling me in the boat. My uncle pulled my dad back in.
It was fun fishing with dad and my uncle. It was cool.

Unit 9, Persuasion, introduces students to the strategy of presenting facts to change a reader's mind. Students are challenged to draft a fact-based argument to persuade readers to change their ideas concerning a common misconception.

Name:

DOGS UP IN SPACE

Some people think monkeys were the first ones up in space because they saw monkey helmets.
We know a dog was the first one up in space. Linka was the first dog up in space.
So, Monkeys were not the first.

Source: Funk and Wagnalls, Blast Off to Space Page 96.

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Name:

ANIMALS

Some people think that animals can't do tricks. They think theyjust live in the woods.

We know that animals can do tricks but they have to be trained.

Seals can do tricks. They can balance a ball on their nose.

Source: Kent Brown, Highlights, Pages 1 and 2.

Name:

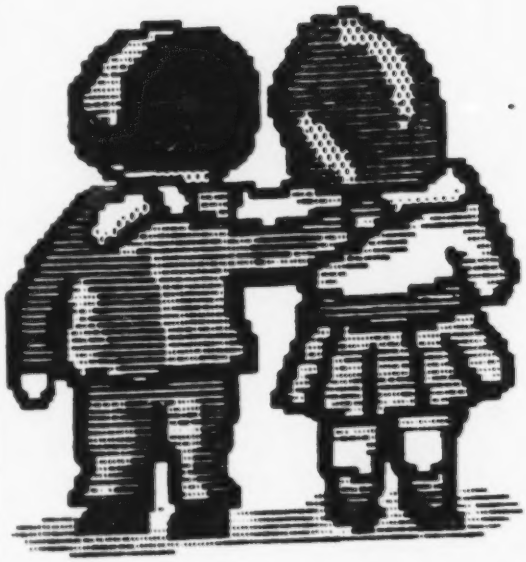
HOW INTERESTING ARE BABIES EYES?

Some people think that babies eyes don't change as they get older. But, they are wrong.

Watch me tell my story and you will think differently.

Babies eyes do change as they get older. All babies eyes are blue when they are born and sometimes they do change but, sometimes they stay blue like mine. I had blue eyes when I was born and mine stayed blue. If you saw me you would be able to see them.

This is important to know because if you have a baby, don't go crazy if the babies eyes change colors.

Source: Dr. Miriam Stoppard, The First Weeks of Life, Page 25. That is the book I got it from and it is a very interesting book. Next time you go to the library check it out and if you like it, borrow it for a couple of days.

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